37 OK.

Historical Society

#37

VOL. 30 NO. 1

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - *PRES. E. R. NICHOLS*
Local Editor, - - *PROF. J. D. WALTERS*
Alumni Editor, - *PROF. J. T. WILLARD*

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
JOHN D. WALTERS, M.S. (K. S. A. C.).....Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet)..... ....Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.).....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.).. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.)..... .....Professor of Horticulture
CLARK M BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York)...Professor of English
ANDREW S. ROWAN, Captain Nineteenth Infantry, U.S.A.....Professor of Military Science
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S.(K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Economics
JULIUS E. KAMMEYER, M.A. (Central Wesleyan College).....Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University).....Professor of Dairy and Animal Husbandry
JOSHUA D. RICKMAN, (I.T.U.)..... .....Superintendent of Printing
MISS MARIAN JONES, M.S. (K.S.A.C.).....Superintendent of Domestic Art
BENJ. S. MCFARLAND, A.M. (Miami) .....Principal Preparatory Department
MISS MARGARET J. MINIS, B.S. (K.S.A.C.).....Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.).....Director of Physical Training

---

MISS LORENA E. CLEMONS, B.S. (K.S.A.C.)..... .....Secretary

JACOB LUND, M.S. (K.S.A.C.).....Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave....Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal).....Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University)....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) .....Asst. Professor of Mechanical Engineering

---

William L. House.....Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.)..... .....Assistant in Music
William Anderson, B.S. (K.S.A.C.)..... .....Assistant in Mathematics
Miss Gertrude Barnes..... .....Assistant Librarian
William Baxter.....Foreman of Greenhouses
Miss Ada Rice, B.S. (K.S.A.C.)..... .....Assistant in English
Louis Wabnitz .....Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.)..... .....Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School)..... .....Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) .....Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music)..... .....Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.)..... ....Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) .....Assistant in Entomology
Leslie F. Paull, A.M. (Brown University).....Assistant in Botany
Miss Emma J. Short .....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.)..... .....Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.)..... .....Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.).....Assistant Chemist, Experiment Station
Walter E. Mathewson, B.S. (K.S.A.C.).....Assistant in Chemistry
Theo. H. Scheffer, A.B. (U. of K.)..... .....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.).....Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn).....Assistant in Mathematics
Miss Caroline Hopps, Ph.D. (University of Chicago)..... .....Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.)..... Assistant in Drawing
Miss Flora Rose (Farmingham Mass. Normal)..... ..Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.).....Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern)..... .....Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College).....Assistant in Animal Husbandry
Frank M. McClenahan, A.M. (Yale)..... Assistant in Chemistry
Geo. C. Wheeler, B.S. (K.S.A.C.)..... Assistant in Feeding Experiments
Miss C. Jeanette Perry, B.S. (K.S.A.C.) .....Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.)..... .....Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.).....Bookkeeper
Miss Matilda Doll .....Clerk in Post-office
Charles Hughes .....Secretary to the President
William R. Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., SEPTEMBER 22, 1903. NO. 1

THE HABIT OF CAREFULNESS.

"EVERYONE knows how a garment, after having been worn a certain time, clings to the shape of the body better than when it was new; there has been a change in the tissue, and this change is a new habit of cohesion. A lock works better after being used some time; at the outset more force was required to overcome certain roughness in the mechanism. The overcoming of their resistance is a phenomenon of habituation. It costs less trouble to fold a paper when it has been folded already; . . . and just so in the nervous system the impressions of outer objects fashion for themselves more and more appropriate paths, and these vital phenomena recur under similar excitements from without, when they have been interrupted a certain time." Thus writes M. Léon Dumont of the effect of habit upon the nervous system; but it is none the less true of the many, many little habits which do not appreciably react upon the physical being, but which nevertheless go to make up the individual, who is in reality only a "bundle of habits." Students are too prone to overlook the little things of life and to think that only the great actions count in the formation of character; but it might be well ever to hold in mind that trifles make character, but character is no trifle.

The habit of careful, systematic and absolutely neat work wherever the student may be employed, whether in the workshop, the study, or in his room, goes far to counteract many of the little deficiencies of his work, which may in time be largely overcome by this very trait of painstaking attention to details. The student who attempts to study in a room where his hat and coat are upon the floor or bed, half his books behind his trunk, which perchance stands open, and the other half on his table, where are a confusion of pencils, erasers, ink-bottles, daily papers, magazines, straps, neckties, nails, and the like, will probably find that his mind is in a corresponding state of chaos, and, moreover, when he

appears at recitations the next day, nine chances out of ten the results of his labors will prove to be in a state of disorder rivaled only by the distracting condition of that study table.

It is a noticeable fact that those students, as well as others, who have added to their list of virtues that famous axiom from the pen of the wise old Ben Franklin—"Let all your things have their places; let each part of your business have its time"—are the ones who are sought when careful and painstaking work is to be done; for their very carefulness insures good and accurate work. The student who observes his margins, his indentation, his indorsements, his spelling, in fact the general appearance of his manuscripts, in mathematics as well as in English, is likely to hand in good papers, either in tests or in daily work, for the very characteristics which beget attention to these things beget also thoroughness in preparation for his recitations.

Psychology teaches that the cultivation of the habit of systematic attention to detail reacts upon the mind causing it to work with more and more accuracy, thereby gradually improving under the rigid discipline until the habit of systematic and accurate thinking becomes a fixed characteristic of the mind itself.

In a recent article in the INDUSTRIALIST a writer points out very plainly that one cause of failure in class work among our students is due primarily to failure to make the very best use of the time at their disposal. This fact no one for a moment questions; but it might be added that failure to give attention to what students are inclined to term "minor details" or "impractical things" is another. Too many take life only in the gross, assuming that the little things will take care of themselves, and forgetting that these little things make up the gross.

It is with success in life as it is with happiness, of which Franklin so wisely says: "Human felicity is produced not so much by the great pieces of good fortune that seldom happen, as by the little advantages that occur every day."

INA E. HOLROYD.

The experiments in the testing and breeding of wheat and other cereals that have been conducted at Halstead, by the United States Department of Agriculture and the Experiment Station, for the last two years have been transferred to McPherson. The Station has rented nineteen acres of good wheat land near the city. These experiments are in charge of Leslie A. Fitz, '02.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The Board of Regents will meet Wednesday, September 23.

Clean up! is the present motto of the Animal Husbandry and Farm Departments.

Prof. A. B. Brown has moved his family into the Dempsey cottage, on Houston street.

Professor Halstead has moved into the Winne cottage, at the corner of Humboldt and Third streets.

Manhattan is advertising for bids on the construction of the new Carnegie Public Library building.

Professor Kammeyer has moved his family into Professor Walters' new cottage, on Bluemont Avenue, near the Athletic Park.

The great pile of old rubbish which has been accumulating behind the farm machinery shed for years is being rapidly cleaned up.

Among the many repairs made during the summer vacation may be mentioned the rebuilding and painting of the two large front porches of Anderson Hall.

What has become of all the bicycles that used to barricade the entrances of every College building? It almost looks as if the "bike" was becoming a thing of the past.

Three departments were represented in the exhibit made by the Agricultural College at the Topeka State Fair last week—Animal Husbandry, Agriculture, and Engineering.

The Manhattan schools enrolled seven hundred fifty-one pupils during the first three days of the fall term. A new stone school building will be erected in ward three this fall and winter.

Assistant Shoesmith is in charge of the College exhibit at Iola this week. He also acts as one of the judges in awarding premiums in farm products and gives a demonstration in corn judging each day.

The College exhibits at the Riley County Fair and the Topeka State Fair were very creditable and did honor to the departments represented. This is an excellent way of calling the attention of the people to the work which is being done at the College and Experiment Station.

The old farm house north of the feed lots has been cleaned up and repaired for a dwelling for Asst. G. C. Wheeler. Mr. Wheeler will move into his new quarters as soon as the water service and plumbing can be completed.

Percy J. Parrott, formerly assistant entomologist in the Experiment Station here, and later holding a similar position in the New York Station, from which he went to Ohio as entomologist of the Experiment Station, has recently been appointed entomologist of the New York Station at Geneva.

The Franklin Literary Society will have a room of their own this year. President Nichols had the old gymnasium in the basement of Fairchild Hall cleaned, calsomined and painted for their especial use. The windows along the south side have been enlarged and the hall is now the roomiest of the society homes.

The Farm Department has had considerable extra labor in preparing exhibition samples for the fairs at Riley, Topeka, and Iola. The exhibits consisted mainly of a large number of samples of varieties of grain in the straw and grasses, neatly tied in small bundles with royal purple, samples of the thrashed grain in glass jars and in bulk, some very fine samples of ear corn, and samples of the roots of corn, oats, and Bromus inermis.

The contract for erecting the new Auditorium, for which the last legislature appropriated $40,000, was awarded on July 28 to Henry Bennett, of Topeka, for $34,444, and the work is now well under way. The excavations are made, the concreting of the wall footings is nearly completed, and the contour walls are about five feet high. The building will measure about 125x125 feet in extreme dimensions and seat, when completed, about three thousand persons. A description will be given in a future number of the INDUSTRIALIST.

Assistant Shoesmith had charge of the exhibits at the Riley and Topeka Fairs. He acted as judge in awarding premiums at Riley, and made a demonstration of corn judging at both places. At Topeka he was kept busy in answering questions and discussing the methods of culture practiced in growing the fine samples of corn, grasses and grains exhibited by the Farm Department, and explaining how the interesting samples, illustrating the root growth of different farm crops, were secured.

Messrs. H. C. Kyle and J. M. Scott, class of '03, have been doing some valuable work for the Farm Department during the summer in washing out and preparing, for the St. Louis Exposition, samples of the roots of all the common farm crops. Several of these samples were exhibited at the Topeka State Fair and were the wonder of all who saw them. The work is also experimental and a careful study is being made of the root systems of the different farm crops. A bulletin will be issued later giving results of this study. Every one who can should visit the Agricultural Hall and see the collection of root samples.

Contractor John Winters, of the new Dairy Hall, is pushing his work to the utmost to complete it before the opening of the winter term, when the classroom and laboratories will be needed. The basement walls are finished and the joists of the main floor are placed. Four weeks of good working fall weather, such as we usually have in Kansas, will get the walls ready for the roof.

The club women of Manhattan are preparing and arranging for the program of the fourth annual meeting of the Kansas Fifth District Federation of Women's Clubs, which will be held in Manhattan November 11, 12, and 13. Mrs. Alden F. Huse, of this city, is president and Mrs. Evelyn Bradford, of Concordia, is secretary. This annual session is expected to be one of the best ever held by the federation. The counties comprising the fifth district are Republic, Cloud, Ottawa, Saline, Washington, Clay, Riley, Marshall, Dickinson, and Geary.

G. O. Dietz, a brother of C. E. Dietz, who coached the K. S. A. C. football team last year, has been employed by the Athletic Association to coach the "farmers" this fall. He is a graduate of Northwestern University, and coached very successfully last year at Drake University. While at Northwestern, Dietz won much praise for his work on the football team, both at tackle and half-back, and was considered one of the most aggressive players in the West. The schedule of games opens with the State Normal team on the home grounds, and on October 3 the team plays K. U., at Lawrence.

Capt. Andrew S. Rowan, who for the past year was instructor in military science and tactics and commandant of the cadet battalion, has been recalled from his detailed service. The Captain has spent the summer in Washington, D. C., but as soon as a new commandant is appointed here he expects to join his regiment, the Nineteenth United States Infantry, at Vancouver Barracks, Oregon. Captain Rowan's name has been made famous by his quest for Garcia at the outbreak of the Spanish-American war, in which he carried a message to the insurgent leader from President McKinley. He is a fine soldier. The well wishes of the Faculty and the students go with him to the far west.

From the Bureau County (Ill.) *Republican* of August 13, which had an extensive writeup of many of the farmers of that county, including pictures of their dwellings, we clip the following: "The family of Irving W. Hopps consists of himself and wife, Maggie, four girls, one boy, Hugh M., and a mother, Mrs. J. Hopps. The daughters of the family are Misses Caroline L., Grace G., Hester M., and Alida B. Miss Caroline L. Hopps is a graduate of the University of Chicago with the degree of Ph. D., and was recently elected to a position in the English Department of the Kansas State College of Agriculture, at Manhattan. And to the credit and honor of this accomplished young lady the writer is proud to add, that during the haying season just past, with its attending scarcity of farm help, she unhesitatingly assumed the reins of control over her father's mowing machine."

ASSIGNMENT SCHEDULE FOR FALL TERM, 1903.

		AGRICULTURE.	DOMESTIC SCIENCE.	GENERAL SCIENCE.	ENGINEERING.	
Freshmen.	1	Rhetoric I.....A 60	Sewing III.....K 58 El. Projection (2½)...A 76	Geometry I.....A 63	El. Botany.....F 53	English Classics....A 62
	2	Elementary Physics..C 62	Rhetoric I .....A 60	Sewing III .....K 58 El. Projection (2½)...A 76	Algebra III.....A 63	El. Botany ....F 53
	3	Geometry I.... .....A 71	El. Physics..... .....C 62	English Structure....A 32	Sewing II .....K 59 Geom. Drawing (2½) A 80	Algebra III.....A 72
	4	Sewing III .....K 58 El. Projection (2½)...A 76	Geometry I.....A 63	El. Physics... .....C 62	English Classics.....A 62	Sewing II.....K 59 Geom. Draw. (2½)..A 76
	5–6	Physics Laboratory..C 39 Blacksmithing I .....S 36 El. Projection (2½)...A 57	Physics Laboratory..C 39 Blacksmithing I.....S 36 El. Projection (2½)...A 57	Physics Laboratory..C 39 Blacksmithing I .....S 36 El. Projection (2½)...A 57	Field Work (2½)..... Foundry .....S 38 Geom. Drawing (2½) A 57	Field Work (2½)..... Foundry.....S 38 Geom. Draw. (2½). A 57
Sophomores.	1	Dairying.....G 56	Chemistry I.....C 26	Horticulture..... ...H 26	Trigonometry .....C 13 Projection Draw.. ..A 57	....
	2	Horticulture.....H 26	Entomology .....F 28 Geometry I.....A 71	Chemistry I.....C 26	Projection Draw.....A 57 Trigonometry.....A 72	.....
	3	Oratory I (2½).....A 51	Trigonometry.....A 63 Entomology ....F 28	Calisthenics.....W 31	Chemistry I.....C 26	....
	4	Chemistry I.....C 26	Color and Design ....A 80	Trigonometry .....C 13	Oratory I (2½).....A 51	..... .
	5–6	Chem. Laboratory ..... Dairy Lab. (10). .....G 35	Chem. Laboratory ..... Ent. Lab. (2½) .....F 35	Chem. Laboratory..... Industrial	Chemistry Lab ..... Blacksmithing II.....S 36	Anal. Chem. (10)....C 27
					MECH. ENGINEERING.	ELECT. ENGINEERING.
Juniors.	1	Animal Nutrition.....C 27	General History I....F 56	General History I....F 56 Animal Nutrition ....C 27	Anal. Geometry.....A 72	Anal. Geometry....A 72
	2	General History I....F 56	Human Nutrition.....C 27	Human Nutrition.....C 27 General History I.. F 56	Power Trans. (3).....G 54	....
	3	Hyg. Farm An. (2½)..V 52 Farm Arch. (2½).. ...A 57	Rhetoric II .....A 60	Rhetoric II.....A 60	Physics..... ...C 60	Physics... .....C 60
	4	Rhetoric II .....A 60	.....	Zoölogy .....F 28	General History I ....F 56	Gen. History I.....F 56
	5–6	Ag. Mechanics..... ...S 33 Horticulture	Dom. Science I (7)...K 32 Laundering..... . .K 1	Zoölogy Laboratory..F 46 Industrial.	Physics Lab ....C 38 Mech. Drawing (2½)..S 52	Physics Lab.. .....C 38 Mech. Draw. (2½)..S 52
	7–8	....	....	....	Machine Shop II .....S 33	Machine Shop II...S 33
Seniors.	1	Vet. Science I.....V 52	Physics I.....C 60	Elective..	Steam Engineering ..C 63	Elect. and Mag.....C 62
	2	Physics I.....C 60	Home Sanitation ....K 32	Physics I.. ....C 60	Applied Mechanics...C 63	Appl. Mechanics ...C 63
	3	Farm Management...G 54	Economic Principles.F 56	Econ. Principles.....F 56	Econ. Principles.....F 56	Econ. Principles....F 56
	4	Bacteriology (2) .....F 60	Bacteriology (2) .....F 60	....	Elec. & Magnetism...C 60	Steam Eng.....C 63
	5–6	Physics Laboratory..C 38 Bact. Laboratory ....F 63 Industrial.....	Physics Laboratory..C 38 Bact. Laboratory ....F 63	Physics Lab.....C 38 Industrial.....	Mach. Design (2½) ...S 52 Eng. Lab. (2½)... ....S 35 Machine Shop .....S 33	Mach. Design (2½)..S 52 Elec. Meas. (2½)....C 36 Mach. Shop.....S 33

Freshmen.	1	Sewing II. ..... K 59 Geom. Drawing (2½) .. A 76	Algebra II ..... A 71	Agriculture ..... G 54	Eng. Readings ..... A 32	Woodwork ..... S 26 Sewing I ..... K 55
	2	English Readings ..... A 32	Woodwork ..... S 26 Sewing I ..... K 55	Algebra II ..... C 13	.....	.....
	3	Elementary Botany .. F 53	English Readings ..... A 36	Woodwork ..... S 26 Sewing I ..... K 55	Algebra II ..... C 13	.....
	4	Algebra III. ..... A 72	El. Botany ..... F 53	Eng. Classics ..... A 36	Woodwork ..... S 26 Sewing I ..... K 55	Algebra II ..... A 71
	5-6	Obj. Drawing (2½) .... A 80 Field Work (2½)	Field Work (2½) ..... Foundry ..... S 38 Geom. Drawing (2½) A 57	Obj. Drawing (2½) .... A 80	Obj. Drawing (2½) ... A 80	Obj. Drawing (2½) ... A 80
		FIRST YEAR.				
Sophomores.	1	Algebra I. ..... F 59	Woodwork ..... S 26 Sewing I ..... K 55	Bookkeeping ..... A 26	Composition ..... A 36	Algebra I ..... F 28
	2	Composition ..... A 33	Algebra I ..... W 33	Woodwork ..... S 26 Sewing I ..... K 55	Bookkeeping ..... A 26	Composition ..... A 62
	3	Bookkeeping ..... A 26	Composition ..... A 62	Algebra I ..... W 33	Woodwork ..... S 26 Sewing I ..... K 55	Composition ..... A 33
	4	Woodwork ..... S 26 Sewing I ..... K 55	Bookkeeping ..... A 26	Composition ..... A 32	Algebra I ..... H 26	Algebra I ..... G 54
	5-6	Freehand Draw. (2½) A 76	Freehand Draw. (2½) A 76	Freehand Draw. (2½) A 76	Freehand Draw. (2½) A 76	Freehand Draw. (2½) A 76
				PREPARATORY.		
Juniors.	1	.....	.....	U. S. History A ..... G 52	El. Physiology ..... F 60	Arithmetic B. ..... W 33
	2	.....	.....	Grammar A ..... A 36	U. S. History B. ..... G 52	Grammar B ..... F 59
	3	.....	.....	El. Physiology ..... F 60	Grammer B ..... F 59	U. S. History B. ..... G 52
	4	.....	.....	Arithmetic A. ..... F 59	Arithmetic B ..... W 33	Geography ..... G 52
	5-6	.....	.....	Spelling, etc ..... A 71	Spelling, etc ..... A 71	Spelling, etc ..... A 71
				DOMESTIC SCIENCE SHORT COURSE.		
				First Term.		Second Term.
Seniors.	1	German. ..... A 33	.....	Drawing ..... A 80	Drawing. ..... A 80	Laundering ..... K 1
	2	.....	.....	Cooking ..... K 31	Cooking ..... K 30	Physiology ..... F 60
	3	.....	.....	Cooking ..... K 31	Cooking ..... K 30	Cooking ..... K 2
	4	History of Ed ..... A 33	.....	Cooking ..... K 31	Cooking ..... K 30	Cooking ..... K 2
	5-6	.....	.....	Sewing (15) ..... K 55	Sewing (15) ..... K 59	Dressmaking (10) ... K 58

Great improvements are in progress in remodeling the farm barn. The whole south basement is being turned into a large hall for storing farm machinery, while the north basement is soon to become a modern horse stable.

During the summer vacation the Board of Regents have filled the different vacant chairs of the Faculty, and we believe that the new professors and assistants are specialists of exceptionally high rank. The chair of domestic science was offered to and accepted by Mrs. Henrietta W. Calvin, the former librarian. Mrs. Calvin is a thorough student and a strong womanly woman and her advancement will meet with general favor among the students. Prof. J. E. Kammeyer, a well-known Kansas educator, formerly of the faculty of the Kansas City, Kan., high school, was elected to the chair of oratory. Prof. Oscar Erf, formerly of the Illinois Agricultural College, was elected to the chair of dairy and animal husbandry. The professor is a recognized authority in his particular line of work. Prof. Frank M. McClenahan was elected assistant in chemistry to fill the vacancy caused by the resignation of Prof. Geo. F. Weida. Professor McClenahan has two degrees from Yale and one from Tarkio College, in Missouri. He has taught physics and chemistry in the Pittsburg, Penn., high school, and for the past two years was assistant in chemistry at Yale. R. J. Kinzer, of Ames, Ia., will be the assistant in the Animal Husbandry Department. Mr. Kinzer graduated from the Iowa State Agricultural College two years ago, and since that time has been superintendent of the farm at that institution. He is an expert stock judge, carrying off nearly all first prizes at the International Stock Show in Chicago two years ago. The chair of physical training for women will be filled by a graduate of the Agricultural College, Miss Estella Fearon. Miss Ella Weeks, last year employed as special artist in the Experiment Station, was elected second assistant in the Industrial Art Department. The Preparatory Department has so enlarged that a third assistant was necessary, and we think that the Board made an excellent choice in electing Miss Helen B. Thompson to fill the position. Miss Clara Pancake was elected to the position of second assistant in the Domestic Science Department. Mr. E. N. Rodell was chosen assistant in printing. Hugo Halstead, a graduate of this College and formerly teacher of mathematical branches in the Commercial College of St. Joseph, Mo., was elected assistant professor of mathematics. Miss Caroline L. Hopps, a graduate (Ph. D.) of the University of Chicago, was made assistant in English. Miss Margaret J. Minis, formerly assistant in the library, was elected head of this important department. Miss Mildred Shaw was made assistant in mathematics. Geo. C. Wheeler was made assistant in feeding experiments. R. F. Booth was elected assistant in physics, and Miss Flora Rose assistant in domestic science. The President and the Board are certain that the newly elected members of the Faculty will prove uniformly efficient and will enter into the work and spirit of the College without delay or friction.

ALUMNI AND FORMER STUDENTS.

John H. Oesterhaus, '01, has entered the Kansas City Veterinary College.

Lucie Wyatt, '01, was married August 21, 1903, to Dr. W. P. Wilson, of Westmoreland.

Bessie A. Mudge, '03, will teach domestic science in the Pittsburg high school this year.

A number of the alumni items appearing in this issue were crowded out of the last number of the preceding volume.

Laura G. Day, '93, returns to Menomonie, Wis., this fall as instructor in domestic economy in the Stout Manual Training School.

Homer Derr, '00, spent a few hours at the College while on his way to the University of Chicago, where he will take up graduate study.

Mary Waugh-Smith, '99, and little daughter arrived recently from Seattle, Wash., and will visit with relatives for several months.

Alfred Houghton Buck arrived at the home of Mr. and Mrs. C. M. Buck, '96 and '97, August 23, 1903. The young man tips the scales at eight pounds.

Chas. Eastman, '02, spent the summer working in the Veterinary Department, and has returned to his studies at the Veterinary College of Kansas City.

Ruth Mudge, '01, has resigned her position as clerk in the Botanical Department to take an assistantship in biology in the Louisville, Ky., high school.

A. H. Leidigh, '02, is located at Amarillo, Texas, where he is in the employ of the United States Department of Agriculture, Division of Cereals.—*Herald.*

Olivia Staatz, special student in domestic science, 1898 '00, and assistant last year, will inaugurate the work in domestic science in the Wichita high school this year.

Prof. and Mrs. W. M. Sawdon [Adelaide Wilder, '98], of Chicago, are inexpressibly happy over a little daughter who came to their home on June 13.—*Nationalist.*

H. D. Orr, '99, visited College on his way home to spend the summer vacation. He has a year's work still to finish the medical course in Northwestern University, Chicago.

E. C. Abbott, '93, Santa Fe, N. M., made a short visit at the College last August. Mr. Abbott is a successful lawyer and is now a district attorney. He has always kept up his interest in mineralogy and does some work in assaying for his own satisfaction.

Miss Elizabeth Agnew, '00, assistant in domestic science last year, will attend Teachers' College, in New York, N. Y., where she will take advanced work.—*Herald.*

R. S. Kellogg, '96, of the Bureau of Forestry, made a short visit at the College during the summer on his return from the inspection of some experimental plantations in Nebraska.

Helena M. Pincomb, '01, declined reëlection as instructor in domestic science in the Pittsburg high school, and will spend the year studying in Teachers' College, New York.

N. A. Richardson, '80, superintendent of schools, San Bernardino, Cal., is the author of a well-written "Introduction to Socialism," which is printed as No. 37 of *Wayland's Monthly.*

W. E. Miller, junior in 1899, has purchased the St. Marys *Star.* Mr. Miller has been prospering as a printer since leaving the College, his greatest mistake being that he didn't graduate before he left.

Miss Clara Spilman, '00, has resigned her position in the Girls' Industrial School, at Beloit, as teacher of domestic science, and has accepted a similar one in the Christian Female Orphans' School, at Camden Point, Mo.—*Herald.*

Miss Josephine Finley expects to leave next week for New Haven, Conn., where she has a position as dietitian in Grace Hospital. Miss Finley graduated at the College with the class of 1900. Her friends wish her success.—*Nationalist.*

E. N. Rodell, '03, who has acted as a student assistant for the last two years in the Printing Department, was chosen as assistant in printing at the June meeting of the Board. That Mr. Rodell is satisfactory to Superintendent Rickman is ample evidence that he is a good printer.

Helen B. Thompson, '03, has been chosen as an assistant in the Preparatory Department. Miss Thompson has had several years of experience as a teacher in the public schools, and during the last two years has satisfactorily taught preparatory classes while completing her College course.

E. C. Cook, '01, died recently in a hospital at Kansas City, where he had been taken for treatment. The immediate cause of death was typhoid fever, but he had been in bad health for about a year as the result of a kick received from a horse. The sympathy of many friends will be with his young wife, Emma Miller-Cook, '01.

R. W. Clothier, '97, professor of chemistry and agriculture in the Third District Normal School of Missouri, with his wife, Elizabeth Blachly-Clothier, made a short visit at the College and with relatives in town this summer. The institution keeps Professor Clothier very busy, he having but two or three weeks' vacation altogether during the year.

Harry N. Whitford, '90, received the degree of doctor of philosophy from the University of Chicago, June 16, 1903, his subjects being, ecology, physiology and morphology of plants. The title of his thesis was, "The Ecological Relations of the Coniferous Forests of the Flathead Valley, Montana."

Howard F. Butterfield, '01, did not accept his reëlection to the position of instructor in manual training in the Pittsburg high school, and is now in Nevada with a surveying party working on the Western Pacific railroad. His classmates, D. M. Ladd, F. W. Haselwood, and E. W. Doane, are working on the same road.

Dean B. Swingle, '00, assistant in pathology in the laboratory of plant pathology, U. S. Department of Agriculture, is author of Bulletin No. 37 of the Bureau of Plant Industry. The title is more impressive than expressive to the ordinary reader, viz.; "Formation of the Spores in the Sporangia of Rhizopus Nigricans and of Phycomyces Nitens."

C. A. Scott, '01, of the Bureau of Forestry, called at the College recently. Mr. Scott was on his way to Colorado and New Mexico to collect cedar and pine seeds for use on the government forest reserves. He reports that the plantations on the sandhills of central Nebraska, which are in his charge, are in a very flourishing condition.

E. M. Cook, of Oakley, a graduate with the class of '00 at the College, visited friends in town Sunday and Monday. He was enroute to Guayanilla, Porto Rico, where he is sent by the United States government to teach English in the Spanish schools. Mr. Cook is an energetic young man, and his friends wish him success in his new work.—*Nationalist.*

Hugo Halstead, '95, was selected by the Regents to fill the position of assistant professor of mathematics here for the next year, Miss Harper having been given leave of absence for that length of time. Mr. Halstead is a young man of unusual mathematical ability. For several years he has been in charge of the mathematical department of Platt's Commercial College, St. Joseph, Mo.

R. J. Peck, '97, writes from Harrison, Okla., that he was one of the lucky ones in the El Reno drawing and has been living on a homestead near Harrison for two years. He has settled down to the life of an agriculturist, with encouraging prospects. His good luck seems to be following him, as he was married June 3, 1903, to Miss Helen Gittings, a former student of the Missouri State Normal School.

Warren Knaus, '82, editor of the McPherson *Democrat*, gave the Experiment Station valuable assistance in securing land near McPherson for the coöperative experiments in connection with the United States Department of Agriculture in the breeding and testing of wheat and other cereals. Mr. Knaus still retains his fondness for entomology, but does not allow it to prevent his conducting a thriving newspaper business.

C. L. Marlatt, '84, who is now entomologist in charge of field work for the United States department of agriculture, is the author of Farmers' Bulletin No. 172, "Scale Insects and Mites on Citrus Trees." The authorship of this bulletin is abundant assurance of its thoroughness and scientific accuracy.

R. H. Pond, '98, has recently been appointed to the professorship of botany and pharmacognosy in Northwestern University. He will also be director of the microscopic laboratories. Professor Pond has acquitted himself with credit in several fields of work and in this new one will find enlarged opportunities.

Miss Laura Davidson, a sophomore student at the Agricultural College in 1900, and C. A. Scott, a member of the class of 1901, were married at the bride's home, at Hall Summit, Kan., September 9, at 8 o'clock P. M. Mr. and Mrs. Scott will travel a short time in Colorado, then go to their future home in Halsey, Neb.—*Republic.*

The board of education of the city schools met last week in regular session. W. W. Hutto ['91] was elected musical director and substitute teacher for the coming year at a salary of $55 a month. The board made a tax levy of fifteen mills for general purposes, and two and one-half mills for bond purposes. September 7 was set for the opening of school. The board voted to construct a two-room school building at a location yet to be determined.—*Nationalist.*

Many readers of the *Nationalist* will be interested to know that Miss Grace J. Stokes and Mr. Judd N. Bridgman ['91] were married in Kansas City, Kan., June 29, 1903. Mr. Bridgman and his bride took a short wedding trip to Denver, Colo. On their return he will resume his work as a railroad builder. Mrs. Bridgman made her home in Manhattan several years ago and attended College here. She has many friends who extend their best wishes.—*Nationalist.*

Dr. W. A. McCullough ['98], one of the finest young physicians and surgeons in the State, moves this week from Linwood to Herington. Doctor McCullough unwillingly makes this change, but he is called there on account of the recent death of his brother, J. J. McCullough, manager of the Herington Telephone Company. The friends of the doctor expect him to build up even a little larger practice in his new home than he had in Leavenworth county.—*Nationalist, from Capital.*

The Alabama Polytechnic Institute gave a summer course of lectures in a Farmers' Institute conducted in Auburn from August 4 to 14. J. M. Jones, '03, assistant in agriculture, gave lectures on the following subjects: "Feeds and Food Stuffs for Cattle, How to Mix Rations, Form of Beef Cattle, Form of Dairy Cattle, Pork Hog and Bacon Hog, Study of Form of Hog, Raising Calves, Practical Scoring of Beef Animals, Butter Making in Alabama, Developing the Beef Herd, Sheep Breeding," etc.

Estella M. Fearon, '03, was elected director of physical training for young women in this institution at the June meeting of the Board of Regents. Miss Fearon has given especial attention to the subject of physical culture all through her College course, and spent most of the summer in study of this subject at Posse Gymnasium, Boston.

A wedding which will be of interest to many Manhattan people occurred Monday evening, June 29, at the home of the bride's sister, in Phillipsburg. The contracting parties were Floyd A. Champlin, '02, of Phillipsburg, and Miss Grace Hill, '99, of this city. The bride was one of the successful teachers in the city schools during the past year. Both Mr. and Mrs. Champlin are College graduates. They will make there home in Phillipsburg. They have the best wishes and congratulations of their large number of friends.— *Nationalist.*

Geo. Polson, of Winkler, and Miss Mary Norton ['97], of this city, were married Tuesday morning, by Rev. Mr. Atkinson, at the home of Mr. and Mrs. J. B. Norton. Only the bride's parents and sister were present. Surrounded by an abundance of home grown flowers and greenery, and cheered by the good wishes of home folks, they began the excursion through the land of wedded life. They left on the afternoon train for their new home at Winkler. Both these young people are well and favorably known in the county, and begin married life with the best wishes of many friends.— *Nationalist.*

Miss Juliet S. Points has won the distinction of being the brightest pupil in the Jersey City High School for several years. Her very name was a forerunner of her success, for she won all the highest points, as well as the forensic gold medal for oratory at the school commencement last Tuesday night. Miss Points was valedictorian not only of her own class but of the January class as well, ranking her first of 100 pupils in all studies. The forensic medal was won in open contest.—*New York World, June 28.* Miss Points is a daughter of Mrs. Alice Stewart Points and a granddaughter of Juliet Stewart, former residents of Manhattan. Mrs. Alice Points graduated from the K. S. A. C. in '75 and taught for a time in Manhattan city schools.—*Nationalist.*

The daily papers state that Capt. James G. Harbord, of the Eleventh United States Cavalry, has been appointed chief of the Philippine constabulary, with the rank and pay of colonel. It is to be hoped that this information is more reliable than the remainder of the paragraph, which states that Captain Harbord is a graduate of the Kansas University and of West Point. As a matter of fact, he never attended either of these institutions. He graduated from the Agricultural College in 1886, and in 1889 enlisted in the regular army with the expectation of earning and receiving promotion from the ranks, and in this he was not disappointed. He has always been held in high esteem by his superior officers, and performed important service in Cuba during the Spanish-American war.

David G. Fairchild, '88, agricultural explorer for the United States Department of Agriculture, is the author of bulletin No. 43 of the Bureau of Plant Industry. This bulletin is upon "Japanese Bamboos and Their Introduction into America." The bulletin is designed to call attention to the great variety of uses to which the bamboo may be put and the possibility of introducing some of the better varieties into mild sections of this country. Mr. Fairchild is also the author of two articles in bulletin No. 25 of the Bureau of Plant Industry. One is upon Saragolla wheat and the other consists of introduction notes upon a variety of plants from South Africa.

The marriage of Miss May Haines Bowen ['96] and Draper Talman Schoonover, of Morgan Park, Ill., occurred Wednesday noon, August 26, at the home of the bride's mother, Mrs. Emma H. Bowen. The impressive ceremony, which was performed by Rev. O. B. Thurston, was witnessed by relatives only. The out-of-town guests were: Mrs. Pond and daughters, Misses Mable and Nellie, of Topeka; Mrs. Burkhart of Scranton. The bride is a Manhattan girl and is esteemed by her many friends for her true womanly ways. The groom is a teacher in the Morgan Park schools. Mr. and Mrs. Schoonover left yesterday afternoon for their home, 11024 Crescent Avenue, Morgan Park, where all wish them happiness and prosperity.—*Nationalist August 27.*

Miss Lenora Eggen, daughter of Mr. and Mrs. J. C. Eggen, of 911 Laramie street, and Mr. Cyrus N. Allison, of Cordell, Okla., were married Thursday evening, August 6, the officiating clergyman being Rev. J. T. Copley. The impressive ring ceremony was used. The bridal toilet was of white silk mull and the bride carried white carnations. Sweet peas and carnations decorated the house. Only relatives and intimate friends were present. After the ceremony the couple led the way to the dining-room, where an elaborate three-course supper was served. Mr. and Mrs. Allison go to Florence for several days, and will be at home, after August 18, at Cordell, Okla., where Mr. Allison is a successful dentist. Mr. Allison was a member of the class of '01 and Mrs. Allison was a former student.— *Nationalist.*

C. M. Correll and Laura H. Trumbull, both of the class of 1900, were married, August 26, at eight o'clock P. M. The wedding took place at the residence of the bride's parents, Rev. and Mrs. J. T. Copley, in the presence of relatives and a few near friends. The ceremony was free from all but the necessary formality, and was performed by Rev. Copley, after the singing of "Oh Promise Me," by Miss Henrietta Hofer. The evening passed quickly with congratulations, conversation and inspection of the numerous bridal gifts. Elaborate and delicious refreshments were served. The happy couple will visit with the groom's parents until their own residence on Osage street is completed. Mr. Correll is principal of one of the city schools, and Miss Trumbull was a teacher last year. The best wishes of many friends are showered upon them.

Historical Society

VOL. 30 NO. 2

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
JOHN D. WALTERS, M.S. (K. S. A. C.)..... Professor of Industrial Art and Designing
ALEXANDER B BROWN, (Boston Music School), A.M. (Olivet)..... ....Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.).....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.).. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.)..... .....Professor of Horticulture
CLARK M BRINK, A.M (U.of R.), Ph.D. (Univ. of City of New York)...Professor of English
ANDREW S. ROWAN, Captain Nineteenth Infantry, U.S.A.....Professor of Military Science
ALBERT M. TEN EYCK, B. Agr. (Wisconsin)..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University).....Professor of Dairy and Animal Husbandry
JOSHUA D. RICKMAN, (I.T.U.).....Superintendent of Printing
MISS MARIAN JONES, M.S. (K.S.A.C.).....Superintendent of Domestic Art
BENJ. S. MCFARLAND A.M. (Miami) ... .Principal Preparatory Department
MISS MARGARET J. MINIS, B.S. (K.S.A.C.).....Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.).....Director of Physical Training

---

MISS LORENA E. CLEMONS, B.S. (K.S.A.C.)..... .....Secretary

JACOB LUND, M.S. (K.S.A.C.).....Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave....Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal)..... ..Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University).... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) .....Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K.S.A.C.) ....Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.)..... .....Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) .... Instructor in Chemistry
William [illegible] House..... .....Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.)... ..... Assistant in Music
William Anderson, B.S. (K.S.A.C.)..... .....Assistant in Mathematics
Miss Gertrude Barnes..... ....Assistant Librarian
William Baxter..... .....Foreman of Greenhouses
Louis Wabnitz ....Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.)..... .....Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School)..... .....Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) .....Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music)..... .Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.) ....Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) .....Assistant in Entomology
Leslie F. Paull, A.M. (Brown University).....Assistant in Botany
Miss Emma J. Short ....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.)..... .....Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.) ....Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.).....Assistant Chemist, Experiment Station
Geo. H. Scheffer A.B. (U. of K.) .....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.) .....Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn).....Assistant in Mathematics
Miss Caroline Hopps, Ph.B (University of Chicago)..... ..... Assistant in English
Miss Helen Thompson. .S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Ella Weeks A.B. (U. of K.).... ..... Assistant in Drawing
Miss Flora Rose (Farmingham Mass. Normal)..... ..Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.)..... .....Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) .....Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College).....Assistant in Animal Husbandry
Geo. [illegible] Wheeler, B.S. (K.S.A.C.)..... ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.)..... ..... Assistant in Chemistry
Horace T. Jones ....Foreman of Blacksmithing
Robert E. Eisman, B.S. (K.S.A.C.)..... ..... Assistant in Horticulture
Miss [illegible] Jeanette [illegible] (K.S.A.C.) .....Executive Clerk
Miss Alice M. [illegible] B.S. (K.S.A.C.)..... .....Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.)..... .....Bookkeeper
Miss Matilda Doll..... .....Clerk in Post-office
Miss Mamie Alexander, B.S. (K.S.A.C.)..... ....Clerk in Farm Department
[illegible]harles [illegible] .....Secretary to the President
William R. Lewis ....Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., SEPTEMBER 29, 1903. NO. 2

NOTES FROM THE FARM DEPARTMENT.

Trials of Disc Plows.

WHILE connected with the North Dakota Experiment Station, I tested several disc plows on the station farm as follows: (1) John Deere Secretary plow; (2) Tiger disc plow, manufactured by the Stoddard Manufacturing Company, Dayton, O.; (3) Rock Island disc plow, manufactured by Rock Island Plow Company, Rock Island, Ill.; (4) Bradley disc plow, manufactured by David Bradley Manufacturing Company, Bradley, Ill.; (5) Bissell rotary plow, manufactured by Bissell Plow Company, South Bend, Ind.; (6) Chattanooga-Hancock disc plow, manufactured by Satley Manufacturing Company, Springfield, Ill.

The trial with the Secretary disc plow was begun in the fall of 1897 and the experiment was continued upon the same ground for four years, wheat being sown each year. The season following the first plowing, the largest crop of wheat produced was from the disc-plowed ground. The next year the yield fell a little below that from the ordinary plowing with a mold-board plow, and the third season the yield averaged three or four bushels less on the disc-plowed ground than from the ordinary plowing. The fourth season there was even a greater difference. A continuous trial was not made with any of the other plows. I am sure, however, that nearly all the newer makes of disc plows do better work than the old Secretary disc. The fault I found with the Secretary plow was that it did not cut and turn over the soil, and that it did not cover all the stubble and left the ground in a rough condition because the furrows did not lap.

The Tiger disc plow, used in 1900 and 1901, certainly did better work than the old Secretary disc. It cut nearly all that it turned, but left the soil in a more broken and loose condition than the mold-board plow.

If a disc plow is used it should be followed almost immediately

with a harrow or some other cultivating implement in order to surface and pack the soil. I tried the gang, triple and quadruple discs. The plow was rather awkward and I do not think the draft for the width of the furrow turned was much less than that of the mold-board plow. It was observed that the draft in proportion to the width of the furrow turned decreased as the number of discs was increased.

The work of the Rock Island plow was similar to that of the Tiger disc. I used the triple disc in this trial. The plow used was rather crude and roughly made, and would stand considerable improvement.

The Bradley disc plow is a neat, well-made plow, and one of the easiest to handle. When the soil was in good condition this plow did excellent work, practically equal to that of the mold-board plow. I have used both the gang and the sulky disc and like the sulky much better than I do the gang. When the ground was in a wet condition, the Bradley disc refused to turn the soil properly.

The Bissell plow is so constructed that the discs may be replaced by mold-board bottoms. The plow is not a success either as a disc or as a mold-board plow. I tried only the gang.

Late in the fall of 1901, I tried the Chattanooga-Hancock plow. The plow which was used was a triple disc, cutting thirty-six inches. This plow was easily handled by four horses, while turning a furrow to the depth of five inches. The ground was very wet when the plow was tried, yet the soil was turned almost perfectly and was left in better condition than the mold-board plow left the soil on the same day. This plow cut off all the land it turned. I noticed that it missed a few rose bushes; otherwise its work in cutting a smooth, clean furrow was equal to that of the mold-board plow. The Hancock plow, like other disc plows, leaves the ground in a more broken and loose condition than the mold-board plow does, and should be followed by a harrow or other surfacing tool. This plow is simple in construction and handy in turning one way, when plowing around the land, but it is almost impossible to back furrow with it and make corners. The plow seems also to have less side draft than any of the others used at this station.

We have a Hapgood-Hancock disc plow at the Kansas Station which has been used now two seasons. This plow is manufac-

tured by the Hapgood Plow Company, Alton, Ill. It is similar to the Chattanooga Hancock plow mentioned above. Its work at the Station has been quite satisfactory.

I am not quite ready to recommend any disc plow as preferable to the best mold-board plows for general use. There are some purposes and certain soils for which the disc plow may be successfully used. In a hard, gummy soil, in which it is almost impossible to keep the required depth with a mold-board plow, the disc plow may be used very advantageously. For the purpose of breaking up the hard-pan, which is apt to form at the depth at which the land is usually plowed, the disc plow is preferable to the mold-board plow.

There is no objection to the disc plow because it does not cut a smooth, level-bottomed furrow. In fact, I believe the rough, corrugated furrow bottom to be preferred to the smooth, level bottom left by the mold-board plow. However, the disc plow does not do that shearing or pulverizing of the soil characteristic of the mold-board plow, although it leaves the soil loose and broken, and hence requires the use of the harrow or roller after the plow to keep the furrow slice from drying out. The disc plow should preferably be used to plow in the fall rather than in the spring, because of the tendency to plow deep, and also because of the loose, open condition in which the soil is left. One or more disc plows might profitably be used on every large farm in Kansas, but it would not be practicable at the present time to wholly replace the mold-board plow by the disc plow.

Green Manuring to Maintain Soil Fertility.

The fertility of the soil in many parts of the State is becoming apparently exhausted. Already the farmers notice a failure of the land to produce the crops which it did a few years ago. Such soils are losing their rich, dark color and are becoming hard and compact. When the soil is wet it runs together like cement, and then drying rapidly it bakes and is as hard as a brick. The ground does not readily absorb water and has a small capacity to retain it. The capillary movement is very rapid and the soil dries quickly. In a dry year such soil may be too loose and easily drift with the wind.

These soils are lacking in humus; they need more vegetable matter. Most Kansas soils are rich in all the mineral elements of plant food. The main factor in maintaining the soil fertility is

to keep up the supply of humus and nitrogen. This may be done by applying stable manure on those farms where stock is kept, but usually the supply of farm-yard manure is not sufficient. The most practical method of maintaining the humus of the soil is by rotation of crops, in which legumes and grasses form a major part, or it is well to practice a system of green manuring by the use of catch crops and cover crops.

If the land can be kept in grass, clover and alfalfa one-half of the time, the supply of humus may be kept up and even increased, and it is possible to keep up the supply by a shorter system of rotation. Cow-peas, soy-beans, field peas and vetches may be used as annual crops in rotation, and the crops may be taken off or plowed under as seems best. It is often practical to plant some crop after the grain is harvested, or at the last cultivation of the corn, plowing such crop under as a green manure in the fall or leaving it as a cover crop during the winter.

Several crops are being tried in this way at this Station this season. After the grain was harvested, some of the ground was seeded with cow-peas, millet, or rye, disked in the stubble. Cow-peas and rye were also sown in the corn at the last cultivation. At this date, September 15, the crops on the grain ground are being plowed under as green manure, preparatory to sowing fall wheat. The cow-peas made the best growth in this trial and are decidedly superior to rye and millet simply in the amount of green manure which they furnish, saying nothing of the power which this crop has in restoring nitrogen to the soil by means of the bacteria which grow on the roots of the plants. On the grain ground the peas made a thick, rank growth and stood fifteen inches high when plowed under. In the corn, however, the cow-peas have made little growth and the rye has not done much better. This trial indicates that it is practical to introduce a green manure crop in growing wheat, and in following wheat or other grain with corn an excellent opportunity is offered to introduce a green manure crop.

Pure-Bred Corn.

The distinguishing characteristic of a pure breed of animals or plants is prepotency or the power to reproduce the true type with all of its essential qualities, even under changed conditions and different environments. Plant breeding is an established fact. Like produces like with the plant as with the animal. It is possi-

ble by selection and breeding to improve the quality and increase the productiveness of corn and other grains and to so fix those characters that the seed reproduces true to its type or breed.

The fact should be taken into consideration, however, that a breed of corn or other grain is usually developed by the breeder in one locality and soil and becomes adapted to certain conditions of soil and climate, so that when the variety is grown under different conditions of soil and climate it may fail to reach the full development, yet it seems probable, and it is a fact shown by actual trial, that pure-bred corn can adapt itself to new conditions of soil and climate more readily than mixed or mongrel breeds, because of its inherent prepotency to reproduce its type.

The Farm Department planted some sixty different varieties of corn last season. These varieties included pure-bred corn from Funk Bros., Bloomington, Ill.; Jas. L. Reid, East Lynn, Ill.; G. W. Gibbons, Barry, Ill., and the Nebraska Experiment Station. Also seed of the catalogue varieties from F. Barteldes & Co., Lawrence, Kan.; Iowa Seed Company, Des Moines, Iowa; Northrup, King & Company, Minneapolis, Minn., and others, and many varieties of native corn from Kansas farmers, some of which have been grown in the State for fifteen and twenty years.

The season has been favorable for growing corn on the upland on the Station farm and a large crop is assured. Several of the pure-bred varieties show up remarkably well and have produced a crop equal or superior to the best Kansas sorts. The pure-bred corn shows much more uniformity in earing, in the size of the ear, type of the ear and in maturing. Some of the varieties which are most promising are Reid's Yellow Dent, Silvermine, Leaming, Legal Tender, Farmer's Interest, and several of the native Kansas sorts. It is a question yet whether it will be best to improve Kansas corn by breeding up by careful selection the best native sorts, or introduce and acclimate some of the best pure-bred types of other states. It is the purpose at this Station to experiment along both these lines.

About twenty acres of Reid's Yellow Dent was planted last season in a field by itself. The crop is excellent and the corn is mostly mature at this date, September 15. A considerable quantity of seed of this variety will be saved and will be for sale to farmers of the State who may wish to try a pure-bred corn. This variety was introduced by Jas. L. Reid, East Lynn, Ill., and

has been carefully selected and bred for the last thirty years. It is a fine type of corn, and if prepotency in breed counts for anything it ought to be a good variety to compare with our best native sorts.

Root Study.

The study of the roots of the various farm crops has shown some interesting results. The roots of oats and barley were washed out to the depth of four and five feet. The roots of Bromus inermis and native blue stem extended even deeper into the soil than those of the grains, and in the samples secured formed a net-work of roots (after the soil was washed out) so thick that a section twelve inches in width, four feet from the surface of ground, formed a veil through which the eye can scarcely penetrate.

The roots of corn, sixty days after planting, had spread near the surface of the ground from row to row, hills three and one-half feet apart, and had reached a depth of nearly three feet. At this stage of growth, a hill consisting of three stalks of corn was feeding on a block of soil six feet square and three feet in depth. The root systems of cane and Kafir-corn are apparently less extensive than that of corn, judging from the samples taken during the early part of the season. Root samples will be taken also of each of these crops when they have reached maturity. The method of taking root samples was first practiced in Wisconsin, in 1892, when as assistant in soil physics the writer prepared a set of samples for the Wisconsin Experiment Station which was exhibited at the Chicago World's Fair. The plan of taking these samples is such that the root growth is that which naturally takes place in undisturbed field soil, and the roots are preserved in the sample almost as they grew in the soil.

Cultivation Pays.

This has been a season in which good, thorough tillage and cultivation of the soil has paid. Much of the late-planted corn throughout the State is weedy and has made a sickly, stunted growth, due largely to insufficient cultivation. Corn planted June 18, on the College farm on well prepared ground, which has received a reasonable amount of cultivation, promises to be a good crop, perhaps equal to early planted corn, if frost holds off until October. In a sense, tillage is manure. The fertility of the soil is largely in an unavailable condition. In order that the plant food may become available, or in a condition so that the

crop may feed upon it, the soil must be supplied with a certain amount of moisture, heat and air in the presence of soil bacteria which act upon the elements of the soil, assisting decay and the breaking down of insoluble compounds.

During the past wet season the air was shut out of the soil and the ground was too cold for rapid growth. Frequent cultivation assisted aeration as well as the warming of the soil and kept down the weeds which are robbers, stealing the plant food and water from the soil.

Cultivate to save the soil moisture in a dry season. Cultivate to aerate and warm the soil in a wet season. Cultivate to kill the weeds every season. Thorough cultivation pays.

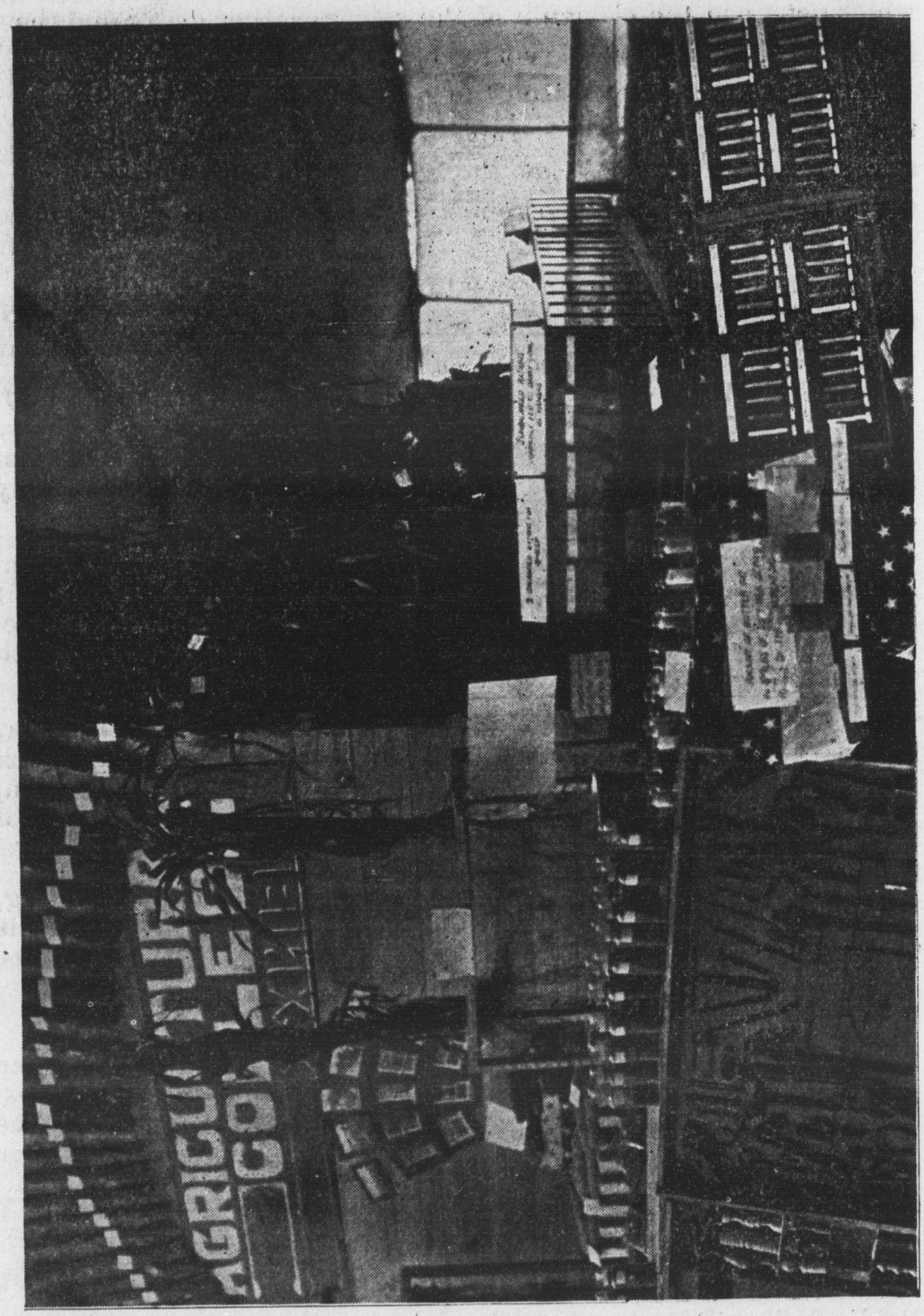
Crop Experiments.

The Farm Department undertook a large series of experiments the past summer. Some four-hundred different plots were planted and have been or will be harvested separately, and the yields of grain, corn and forage will be determined for each plot. Considerable work has been done in testing varieties. The crops have been uniformly good and the experiments have been fairly successful in almost every trial. The corn crop especially is excellent. Some sixty varieties were grown, both from early and late plantings. Twenty varieties of soy beans and thirty of cowpeas are now maturing and are a good crop. Quite extensive experiments have been made in planting late forage crops and with good results. It is the purpose to publish a crop bulletin during the fall or winter, giving the results of the trials of the different crops and variety tests.

The Corn Crop.

The soil of the Station farm is upland and rather poor at that, but in spite of this fact the Farm Department has some of the best corn grown in the State. One field of Reid's Yellow Dent is certainly hard to beat. The seed of this corn was secured directly from Mr. Reid. The corn has been grown on the Station farm for two seasons. It is proposed to save a considerable quantity of this corn for seed, which will be for sale to farmers who wish to make a trial of pure-bred corn. Reid's Yellow Dent has been bred longer than any other high-bred type. It may not be so well adapted to Kansas soil and climate as are the best native varieties, but it is worthy of trial throughout eastern Kansas.

A. M. TEN EYCK.



Agricultural College Exhibit, State Fair, Topeka.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Onward and upward! The Kansas State Agricultural College will probably enroll eighteen hundred students during the year 1903–'04.

Professor Brink has moved his family into the Allen cottage, south of the high school. He intends to build a residence nearer College during the present school year.

The first football game of the season took place last Saturday afternoon, when the Agricultural College met the heavy team from the Emporia State Normal. The teams were about evenly matched, the score being 0 to 0.

Postmaster W. E. Menohr, of Lincoln, lately editor of the Lincoln *Republican*, stopped off between trains last Friday to visit friends about College. He had not been here since the early nineties and was greatly surprised by the many evidences of growth of the institution.

Assistants Wheeler and Shoesmith are in Wichita this week, where they have charge of the College exhibits at the Sedgwick County Fair. The exhibits consist chiefly of samples of corn, cereals, grasses, alfalfa, soy-beans, etc., and will be a center of attraction for farmers of that section of the State.

During the dry weather in August and again at this writing, September 25, the drought resisting qualities of Bromus inermis as a pasture grass are apparent. While the native grass pasture and the orchard-grass and English blue-grass pastures are practically bare, the Bromus inermis is still green and growing.

The Board of Regents were in session last week to consider the routine work for the fall term. All the members were present and seemed to be highly pleased with the condition of the different departments. On Friday noon they took the train for the Hays Branch Experiment Station to inspect the many improvements needed or going on there.

The Franklin Literary Society gave a play in College chapel last Saturday night to a full house of invited guests. The play was entitled "The Last Loaf." The cast of characters, requiring eight persons, was well selected and each part was well rendered. Supt. J. D. Rickman assisted the society as director, and to his efforts much of the success is undoubtedly due. The music was furnished by the College orchestra and the Bluemont quartet.

Corn has matured very fast in the last ten days. Much of the early planting on the College farm has been cut and put in the shock. Some of the early varieties, such as Pride of the North, Minnesota King, Earliest Ripe, etc., which were planted as late as June 20, were nearly matured September 25. Late planted corn is not so good as early planted corn.

The Executive Department gave a reception in the Girls' Gymnasium last Wednesday evening for the Board of Regents and the instructors and their wives. The large drill hall was beautifully decorated with ferns and flowers. A musical program was rendered by the mandolin club and light refreshments were served by the young ladies of the Executive Department. All report a good time.

Among the many interested visitors at the College during the vacation was Garnett White, the teacher of farming and horticulture of the Indian School, at Genoa, Neb. Mr. White is a full-blood Blackfoot Indian, but though he had no opportunity to go to school till he was seventeen years of age, he is now a specialist of high rank in many lines of his work. He stayed with us for about three weeks and was greatly interested in everything he saw.

Among the many repairs and building improvements made during the summer vacation is the taking out of several division walls in the basement of Kedzie Hall for the purpose of arranging a large laboratory for the girls of the short course. The room, though a basement, is well lighted and presents a fair and clean appearance. In the old dining-hall in the basement the windows were enlarged and a number of other changes made for the purpose of converting it into a laundry for the department.

Tuesday evening of last week Walter Stingley entertained complimentary to G. O. Greene, who left this week for Amherst Agricultural College, where he has been elected to a position in the horticultural department. The evening was spent in various games and contests. The guests were: Mr. and Mrs. Chas. Hughes, Mrs. Haggman, and Misses Helen Knostman, Edith Huntress, Reba Wolf, Jeanette Perry, Kate Stingley, of Kansas City, and Messrs. S. James Pratt, Robt. Spilman, G. O. Greene, W. W. McLean, Max Wolf, and Roland McKee, of Blue Rapids.

The replacing of the old heating pipe line from the heating plant to the buildings on the south part of the campus, which was engineered during the vacation by Supt. J. Lund, proved to be a difficult job and is not yet completed. The tunnel caved in at one place or another almost every day. The rains did their best to fill the hole at different times, and when the "elements" were docile the laborers made trouble by striking or going on a vacation. Mr. Lund says he will have everything in good shape by the arrival of the winter weather. The local editor, who saw him at his difficult task every day during the summer, feels like patting him on the back and saying, "Well done, Jacob!"

Professor Dickens and Librarian Minis went to Winchester, Wednesday, to conduct a farmers' institute.

The friends of the Agricultural College will rejoice with us when we tell them that the institution has recorded another phenomenal increase of students during the first week of its fall term. Neither the flood in the valleys of the Kaw and its tributaries nor the incidental-fee-law can check the growth of the great technical school of Kansas. The following is a comparative statement of the enrolment by classes one week after the opening of the fall term, for this year and last year:

	1902	*1903*
Preparatory	110	127
Freshmen	387	490
Sophomores	214	169
Juniors	120	141
Seniors	55	93
Totals	886	1020

In addition to these one thousand twenty students actually present last Thursday afternoon in the different classrooms, there are at work in the shops and laboratories twenty-three apprentices, twelve special students, several hospitants and a number of graduates. As a result every lecture room, every hall, the chapel, the shops, the barns—every nook and corner—is filled with busy young men and women, and though we are erecting from one to two new buildings per year, we can hardly keep up with the increase. This week the short course domestic science girls begin work. But let them come; the more the merrier!

ALUMNI AND FORMER STUDENTS.

R. M. McKee, '00, was a welcome visitor last week and was much impressed by the evidences of growth that are so strongly manifested just now.

Another addition has been made to the list of alumni twins. F. J. Smith and Laura M'Keen-Smith, both of the class of '95, are the proud possessors of the latest acquisition, a boy and girl, born September 22.

Robt. E. Eastman, '00, delivered a most interesting and instructive address before the faculty, students, and invited guests of the Hampton, Va., Normal Institute on the subject, "Mosquitoes, Malaria, and Man."

R. E. Eastman, '00, professor of agriculture at Hampton Institute the past year, has been elected assistant in horticulture at this institution. He has had two years of graduate work at Cornell University, and is well fitted for the position.

The following graduates are teaching schools in Riley county: Junie Parks, '98; Etta M. Barnard, '02; Della Drollinger, '02; Emma Cain, '01; Abbie Putnam, '02; Adelaide Strite, '01; Sarah E. Davies, '02; Alice M. Shofe, '97; E. J. Abell, '95; Mary O. Barr, '02; Dovie Ulrich, '03; Geo. C. Hall, '96, and Katherine Manly, '99.

Rev. A. D. Rice, '92, located at Oketo, Kan., visited his alma mater, and his sister Ada, last week.

Birdie E. Secrest, '92, of Randolph, has been elected teacher of domestic science in the Industrial School for Girls, at Beloit, Kan.

J. H. Criswell, '89, and Isabelle Frisbie-Criswell '94, are happy in the birth of a daughter, Wednesday, September 23. Mr. Criswell is employed on the Deming ranch, near Oswego, and is now making a short visit home.

Geo. O. Greene, '00, who has served so efficiently as assistant horticulturist here for the last two years as to awaken the covetousness of several other states, has resigned to accept a similar position in the Massachusetts Agricultural College, where Prof. Frank A. Waugh, '91, is the head of the department. We regret to see Mr. Greene leave, and wish him the highest success.

Mrs. A. W. Roe, Dorrance, Kan., asks that the INDUSTRIALIST be sent to her instead of to Miss Mary Frances Carnell, '97. She explains that Miss Carnell was married to Mr. Roe, December 3, 1902. Mr. Roe was a student here in 1892, and both Mr. and Mrs. Roe send best wishes for the College. Though somewhat belated, the INDUSTRIALIST and other friends hope that the expectations of the new couple will be fully realized.

Mr. H. B. Holroyd, '03, writes from his camp near Colorado Springs, Colo., that he has spent a pleasant summer's work in northern Nebraska, and after working in Colorado two months expects to go to southern California. His party at present is studying the Pike's Peak forest reserve and means of bettering the water-supply for Colorado Springs and Pueblo. Mr. Holroyd is connected with the Bureau of Forestry.

Lieut. Robert B. Mitchell, '99, was on July 31, promoted to a First Lieutenancy in the Artillery Corps. He had a leave of absence for a month during the summer, much of the time being spent in Kansas. He is still stationed at Fortress Monroe, Va., and the company with which he serves, the Thirty-fifth Coast Artillery, recently broke the United States records for speed and accuracy of fire with the twelve-inch rifle.

WASHINGTON ALUMNI.

The following paragraphs have been received from Mrs. Gertrude Havens-Norton, '96, secretary of the Washington Alumni Association, and in the collection of which she was assisted by others of the association. They include an item concerning each member, as well as a few relating to visitors:

The Washington alumni are always glad to meet and welcome any of the alumni who may visit Washington. If any coming for even a very short time would notify the secretary, all the members would join with her in trying to make the visit a pleasant

one. The following members have visited the national capital this summer: E. A. Allen, '87, assistant superintendent of the Carlisle Indian School, and J. B. Brown, '87, superintendent of the Morris, Minn., Indian School, were in Washington recently on business with the Indian Department. Several of the Washington K. S. A. C. colony had very pleasant visits with them.

J. R. Harrison, '88, post-office inspector, whose headquarters are in Kansas City, has been in Washington since March. He has a prominent part in the investigation of the Post-office Department.

Mrs. J. T. Willard and Miss Maggie Warner put in a few strenuous days in Washington about the middle of August. Mrs. Willard spent much of her time in the congressional library. She found many of the places of interest closed for the summer.

VACATION NOTES OF THE WASHINGTON ALUMNI.

M. A. Carleton, '87, has spent the summer in the West looking after his wheat experiments.

L. A. Fitz, '02, has been at work on wheat experiments in Kansas and has not yet returned to Washington.

E. R. Secrest, '02, C. A. Scott, '01, and Z. L. Bliss, '99, have spent the summer at forestry field work in the West.

Dorothy Viola Norton, aged 0, arrived in Washington, September 8, and will make her home with Mr. and Mrs. J. B. S. Norton, at College Park, Md.

Geo. H. Failyer, '77, visited his Alma Mater and his family in Manhattan early in the summer, and since then has been hard at work in his laboratory.

J. B. Norton, '97, took his vacation in the hospital, with six weeks of typhoid fever, and has since spent a few weeks in the oat regions of the West.

E. C. Butterfield, '98, spent the summer at his work on the Arlington Experimental Farms, near Washington. He is reported to be married, but the report is not officially confirmed.

L. W. Call, '83, has been hard at work with only an occasional day off for rest and recreation. He finds Washington quite as comfortable for himself and family as many of the summer resorts.

W. T. Swingle, '90, and D. G. Fairchild, '88, have both returned to work in Washington, after traveling for some time in foreign countries in the interests of the United States Department of Agriculture.

Mrs. Bertha Winchip-Spilman, '91, after her short visit to Manhattan at the time of the death of her little daughter, has spent the summer at home where her mother, Mrs. Winchip. has been visiting her.

W. O. Lyon, '93, after taking some special work in stenography and typewriting, has accepted a position in the Pennsylvania railroad offices in Philadelphia, with a substantial salary and prospect of advancement.

C. L. Marlatt, '84, spent the summer at York Harbor, Me., and reports fine and abundant entertainment. He gave an address before the American Pomological Society at Boston on the San Jose scale on his return trip.

C. P. Hartley, '92, has recently acquired considerable press notoriety on account of his success in breeding new varieties of corn. Several recent bulletins from the Agricultural Department bear his name as author.

A technical bulletin from the pathological laboratory of the Bureau of Plant Industry shows the work of D. B. Swingle, '00. He expects soon to return to Wisconsin to complete work for the degree of doctor of philosophy.

Julia R. Pearce, '90, visited the mountains of western Maryland and then took a cruise on Chesapeake Bay for her vacation, and has spent the rest of the time "digging" at soil analysis, and in the evening studying Spanish.

G. L. Clothier, '92, has been busily engaged in office work of the tree planting division of the Bureau of Forestry during the absence of his associates from Washington, and later expects to be engaged in planning plantings in the West.

Geo. F. Thompson spent part of his summer with some friends on their large Angora goat farm at Hancock, in one of the most interesting parts of the Maryland mountains, where the Potomac river limits the width of the state to only one mile.

C. F. Doane, '96, has been busy at his dairy work, and has been touring the state of Maryland taking photographs for a booklet to present the dairy interests of the state at the Louisiana Purchase Exposition. With his wife, Margaret Carleton-Doane, '96, and daughter, Alice, he spent two weeks at Rhehoboth Beach, Del.

W. L. Hall, '97, visited California and went from there to Hawaii. At the latter place he established a station for forestry work. His wife, Gertrude Lyman-Hall, and son George remained at their new suburban home in Hyattsville, Md., which they completed last spring, with the exception of two weeks spent at Rhehoboth Beach, Del.

J. B. S. Norton, '96, and wife, Gertrude Havens-Norton, '96, made a short visit to Philadelphia and New York early in the summer. At New York Professor Norton spent some time studying at the New York Botanical Garden. He has been busy at nursery inspection work and aiding in preparing plans and collecting material to illustrate the horticultural interests of Maryland at the Louisiana Purchase Exposition.

Historical Society

VOL. 30 NO. 3

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
JOHN D. WALTERS, M.S. (K. S. A. C.).....Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet).....Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.).....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.).. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York)...Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University).....Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A..Prof. of Military Science
JOSHUA D. RICKMAN, (I.T., U.).....Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami).....Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.).....Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.).....Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.).....Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.).....Secretary

JACOB LUND, M.S. (K.S.A.C.).....Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave....Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal).....Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University)....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.).....Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K.S.A.C.).....Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.).....Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale).....Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.).....Assistant in Music
William Anderson, B.S. (K.S.A.C.).....Assistant in Mathematics
Miss Gertrude Barnes.....Assistant Librarian
William Baxter.....Foreman of Greenhouses
Louis Wabnitz.....Foreman of Machine Shops
Ernest C. Gasser.....Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School).....Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.).....Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music).....Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.).....Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.).....Assistant in Entomology
Leslie F. Paull, A.M. (Brown University).....Assistant in Botany
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.).....Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.).....Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.).....Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.).....Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn).....Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago).....Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.).....Assistant in Drawing
Miss Flora Rose (Farmingham Mass. Normal).....Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.).....Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern).....Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College).....Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K.S.A.C.).....Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.).....Assistant in Chemistry
Robert E. Eastman, B.S. (K.S.A.C.).....Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K.S.A.C.).....Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.).....Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.).....Bookkeeper
Miss Matilda Doll.....Clerk in Post-office
Miss Mamie Alexander, B.S. (K.S.A.C.).....Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.).....Clerk in Botanical Department
Charles Hughes.....Secretary to the President
William R. Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., OCTOBER 6, 1903. NO. 3

THE EDUCATIONAL MEANING OF ERROR.

A VISIT to the average grade-school room is likely to convince the close observer that the teacher has very little use or respect for error. The teacher is likely seen to make many efforts to conceal the fact that her pupils make mistakes. Indeed, the sentiment is not uncommon among teachers to the effect that to make the most creditable showing before visitors, the pupils must go through their recitations without a break or hesitation. In order to secure a "perfect" recitation on such an occasion, the teacher will often ask easy or leading questions, or take the class over some work prepared especially for the deception of visitors.

But error ought to have a more respectable standing in the schoolroom than merely to be despised and rejected. It certainly does have a valid place in the educational process, but until this fact is realized the teacher seems to me to be working more or less in the dark. The child that never makes a mistake (if conceivable) is a monster incapable of learning. Believing that the mistakes made by pupils ought to be and can be turned to good account, I shall try to set forth a few statements with regard to the educational meaning of error.

What we teachers need to learn more perfectly is how to make use of the errors made by pupils. It is not worth while to try to cover up or cut out these mistakes, or to say they don't count. While it may not be worth so much, error is just as much a step in the process as truth, and to deny it such a place is fatal to the process.

In logical processes it is often better to determine what a thing is not before discovering what it is. One of two possible consequences is shown to be false in order that the other may be proven true; or a false premise or statement is assumed as true in order to show the contradictions into which such assumptions will lead. Although this method belongs perhaps more particu-

larly to logic and geometry, it has many an application in disguised form in all the grades of school work. Rather than simply declare a pupil's opinion or the answer he gives "wrong", his conclusion should be taken as the basis of further deductions on his own part until he sees for himself where the process will lead to.

In aesthetical interpretations error has at least one important function. Whether the learner is developing an idea of the beautiful in things, in thought, or in conduct, the erroneous or the homely or the ugly will serve as an antithesis in disciplining the mind. Of course it is the business of instruction to see that these undesirable antitheses are used somewhat sparingly so that the learner's mind may not become imbued with them and the understanding of the higher forms thus hindered. A low and depraved aesthetic taste, when once acquired, is perhaps never fully eradicated.

As an ethical discipline error needs to be treated with the utmost care and conscientiousness. Wrong doing seems to possess a great fascination for the young. The child's standards of right and wrong in early years are acquired largely through dogmatic instruction from his elders, and consequently they are not *his personal* standards, and from his own point of view they have no validity. It seems necessary, therefore, that the child have some kind of influence exerted over him until he becomes conscious of the meaning of right and wrong in conduct.

But the ethical problem, so far as formal instruction is concerned, naturally becomes one of psychology. Ethical conduct is not so much the outgrowth of mature reflection on the subject as it is the result of practice in right doing. Some of the more general psychological questions as regards error are: What can be done with it? How is it related to the self in the purposive progress that is being made? How can the most serious errors in general conduct be avoided? I will now try to treat the last question briefly.

I believe that erroneous ways of performing tasks and also many of the common forms of bad conduct are often the result of unintentional bad suggestion. That is to say, the teacher or parent makes so much of the objectionable act in warning against error and so little of the desirable act in pointing out the correct way, that the former becomes the more personal point of view to

the child. The teacher says in substance, "Here is the pitfall. Examine it carefully so as to know how to avoid it." What happens here? Instead of forming a resolution to avoid error as the teacher supposes him to do, the child, being deeply absorbed in the subject, is unintentionally taken through a drill in the performance of the error. For example, a teacher once gave definite instruction in cigarette smoking as follows: A boy who had been caught in the act of smoking was compelled to roll, light and smoke a cigarette in the presence of a roomful of other pupils, in order to punish him and to teach the others the evil of the practice.

What ought to be done in such cases is to picture the bright side of conduct more vividly than the dark. One of the great factors in education is imitation. The child naturally follows that course which is presented to him most vividly. The methods of the old-time preacher in depicting so eloquently and minutely the sinner and his sins may have frightened the wrong doer out of his wits temporarily, but the general result, no doubt, was to deepen in the minds of his hearers the inclination to sin. Whether in church or school, the effect of such methods is ever the same, and directly opposite to that intended.

While the child does or ought to find and solve his own problem, I believe in a good deal of direction and supervision. He ought to be guided somewhat in the habituation of avoiding and overcoming error. A fixed mode of reacting in many of the more common situations is what is desired here. Hereby the child learns to achieve; to succeed rather than to fail. In this process of habituation, if it goes on rightly, the learner finds that there is always a way out of every undesirable situation. Error thus becomes to him a tool of success.

One of the chief bearings of error on education is that of its emotional value. The child that learns must become sensitive on the subject of his mistakes. It isn't putting it strong enough merely to say that he must become conscious of them. This sensitiveness ought to remain with the pupil throughout the entire course of his instruction, but of course it can be too intense. I will try to make this matter a little more concrete.

A pupil comes up at the recitation period without having sufficiently prepared his lesson, and fails. If properly sensitive, he experiences pretty deep emotion of shame or embarrassment in

some form. The blood flows warmer and the heart beats faster. In this way he is pretty thoroughly punished for his shortcomings. As a consequence of this emotion, his thought processes are quickened and a determination to make amends for the error by more thorough work in the future is likely to follow. As the child grows older this period of reflection following emotion becomes more valuable. He soon learns to image himself in the act of overcoming past errors. In other words, he is getting valuable experience in the formation of ideals.

Baldwin, in his "Development and Evolution," speaks of embarrassment under the general term of "Social sensitiveness," or "Sense of other selves." If this experience is preserved in form of a habit, the individual gets the undoubted benefit of emotional response. I believe this condition to be a valuable aid to mature persons, *e. g.*, the young man beginning business. His blunders may be multiplied at first; but, being so keenly alive to the situation, he is soon enabled to bring about a better adjustment and a higher measure of success. An overthrow for such a young man is only a temporary affair. He is certain to turn this defect into so much capital for a future investment.

It has already been indicated that error has meaning for volition. There is real enjoyment in doing what one wills to do and in overcoming opposition and error. Everyone takes a sort of domineering interest in that which is less than himself. The child is seen to toy with error. Recently I was talking with a little three-year-old boy who was perfectly familiar with both the dandelion and clover blossoms at his feet. He said, "Look out! Don't step on my dandiclover!" So children often misspell and mispronounce words and imitate many other forms of error in a pure spirit of levity. The educational value of this kind of practice is not to be ignored.

But in its more serious aspects, error is seen to have a still higher value for volitional development. In the very act of overcoming there is a seeming accumulation of nerve and volitional energy. The consciousness of mastery is pleasurable as the habit of mastery is strengthening. The pupil is likely to profit by the errors seen in his inferiors and to be weakened by the bad examples of his superiors; but, if his education is in ideal course of development, his own errors will not merely become of use in

the solution of succeeding problems, they will enter into the very strengthening of his character.

Thus we see that error has a very significant place in the course of instruction. But I want to add a word with reference to the specific function of the teacher in all this process. I believe that the teacher should actually aid the child in becoming aware of his errors. This is often more important than that the child should merely find the answer to his problem. While the process is primarily one of finding out the truth, it is perhaps secondarily one of becoming conscious of the errors made in this process.

We see too many instances of unconscious blundering through the course of study. If asked how the teacher is to aid directly in this process, I should say that the Socratic method is the best general rule of procedure.

W. A. McKeever.

SOME CHARACTERISTICS OF SWEDISH EDUCATIONAL GYMNASTICS.

THE Swedish system of physical education was first devised by P. H. Ling early in the nineteenth century. At its very beginning it was founded upon a knowledge of physiological laws, and has since been greatly enlarged. By actual practice, it has been found to have the effect claimed for it, and the system rests as much upon this fact as upon its scientific basis.

The system was not founded for the purpose of making athletes, although it is sometimes used for that purpose. Its primary object is to maintain good health by systematic exercise and, by developing endurance and skill, to give freshness of mind, power of will, resoluteness, and courage. Furthermore, the pupil becomes accustomed to giving strict attention and becomes quick and exact in obeying orders.

By a systematic use of Swedish exercises, each organ and each muscle learns to do its own normal work, thus becoming more perfect in itself. At the same time they are taught to work in connection with other parts; in other words, a higher degree of coördination of movements is the result.

The Swedish system also corrects faults of posture, such as round shoulders and curvature of the spine. In round shoulders the dorsal muscles of the neck are lengthened and weakened, thus allowing the ventral muscles to shorten and pull the shoul-

ders forward. Practically the same cause is at work in spinal curvature, the muscles of the concave side shortening while those of the convex side lengthen. These faults are corrected by exercises which stretch and lengthen the shorter muscles, while the antagonistic muscles shorten and become stronger, thus holding the parts in place.

Great attention is also paid to proper breathing, and the pupil is often told to "Breathe!" and "Take a deep breath!" Progression, both in the day's order and between each lesson, gives a more systematic training. The exercises are classified according to their effect upon the body. The classification is as follows:

I. *Introductory Exercises.*—These are easy exercises given at the beginning of the lesson. Their purpose is to change the thought from mental to purely physical work and to give the pupil good muscular control.

II. *Arch-Flexions.*—Arch-flexions consist of backward flexions of the trunk. The effect is a straightening of the dorsal region of the spine, an increase of chest capacity and increased inspiration. These movements are balanced by forward downward flexions.

III. *Heaving Movements.*—These are usually exercises of hanging and climbing. They expand the upper part of the chest by lifting it upward and also develop the arms.

IV. *Balance Movements.*—These exercises are used for the purpose of securing good equilibrium. They have another good effect, that of diminishing the heart beat.

V. *Shoulder-blade Movements.*—These are of two kinds—(*a*) movements of localization and (*b*) movements of expansion. Both are arm movements, the first serving to place the shoulder-blades in the proper position and the second to widen the chest, broaden the back and straighten the dorsal spine.

VI. *Abdominal Exercises.*—These are exercises bringing into play the muscles of the abdomen, and are exceedingly useful in improving the digestion.

VII. *Lateral Trunk Movements.*—Rotations and sideway flexions of the trunk. The muscles of the waist are strengthened and the circulation is aided.

VIII. *Slow Leg Movements.*—These are used for the purpose of quieting the heart beat, whenever the previous exercises have been violent.

IX. *Jumping and Vaulting.*—Jumping and vaulting are given

to teach the pupil the proper way of jumping so that if called upon he may jump a good distance without injury. They also develop courage and self-reliance and produce greater coördination.

X. *Respiratory Exercises* are always given at the end of the lesson, and if needed are introduced during the lesson. The exercises consist of deep breathing, in connection with arm movements. They are used to give normal respiration and to lessen the heart beat.

All the exercises are given to words of command and no music is used. The pupils are thus taught to think and act quickly.

ESTELLA M. FEARON.

THE LARGEST PRINTING-OFFICE IN THE WORLD.

UNCLE SAM owns the largest printing-office in the world. It is under the management of Frank W. Palmer, formerly of the Chicago *Inter-Ocean*. Until recently it was housed in a dilapidated old barracks, but it is now in one of the most pretentious homes imaginable. The building for this immense printing plant cost $2,400,000, has seven floors containing 619,700 square feet of floor space, which is equivalent to about fourteen acres. There are 1500 windows, being about one-third of the wall space. In order that no light may be lost—printers must have good light—the walls of the rooms are lined with white enameled brick, which may be washed. The building is as near fire proof as is possible. Because of the immense weight of printing equipment, the walls are built like a fortress, the floors being capable of supporting 85,000,000 pounds. The outside walls are three feet thick, consuming 10,000,000 brick in their construction, while within them is the steel frame work weighing 12,000,000 pounds. Ventilating fans are placed in the loft and draw the air from the floors through shafts and expel it through the roof with such force that there is an entire change of atmosphere in the building every seven minutes. Each employé will have 3000 cubic feet of pure, fresh air per hour. There are 75 drinking fountains placed at convenient places throughout the building, and these are supplied from pumps in the basement, the water passing through an ammonia freezing plant, which reduces it to a temperature of 45° F.

There are over 4000 employes upon the pay-roll. Over 300 presses, besides numerous other machines, are used, which are driven by three of the largest Crocker-Wheeler dynamos in the

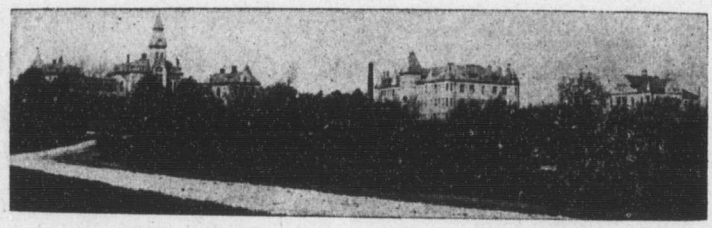
country, each being 300 horse-power. There are 7000 incandescent lamps. Last year Uncle Sam paid $5,848,453 for his printing. It is claimed much of this is a useless expenditure, and President Roosevelt has taken steps to reduce the amount.

The most remarkable job of printing—the record-breaker of the world—was the publication, in the government office, of the report of the congressional committee inquiring into the hazing incident at West Point three years ago. The manuscript was delivered to the foreman on Saturday evening, about six o'clock, and on Monday morning three volumes containing 2000 printed pages were delivered upon the desks of the members of the House of Representatives. The foreman says it would be possible to set the type, print, bind and deliver a book as large as Webster's Dictionary in twenty-four hours.

The French government has the next largest establishment in the world, in a village near Paris. The German government's is third in size, and that of the Japanese fourth. John Bull gets his printing done by contract. Several foreign countries have sent representatives to inspect our government office.

There is no private establishment in the world that bears any comparison with the government office; there is none half so large. Twenty-five or thirty years ago the Harpers had the largest printing-office in the world, employing 400 people; but now it is commonplace. It is said that a company at Edinburgh, Scotland, is building an establishment twice as large as that of the government office, which will cost $7,000,000, while the department at Washington represents an expenditure of about $4,000,000.

J. D. RICKMAN.



THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The short course in domestic science opened last week with an enrolment of fifty.

The senior class class of 1903–'04 is the first in the history of the College to reach the one hundred member mark.

The College football team went to Lawrence last Saturday to play the University. The game stood 34:0 in favor of K. U.

The *Baker Orange* says of the *Students' Herald:* "The students of K. S. A. C. are putting out one of the best papers in the State."

Professor Willard enjoys a new private den, formed by building a partition across the south end of the boys' coatroom, west of his office.

Percy J. Parrott, formerly assistant in entomology at K. S. A. C., has recently been appointed entomologist of the New York station, at Geneva.

The first College band this term will have thirty-five members and the second twenty-five. The orchestra has twenty-six members and the violin class twenty-five.

In response to requests from Governor Bailey, Doctor Mayo has visited Valley Falls, Walnut and Baldwin to investigate diseases of live stock that were reported in those places.

The Farm Department has purchased a new Osborne corn-binder, and a large part of the corn crop is being cut and shocked with the purpose of making use of the fodder as well as the ears.

On Monday Doctor Mayo was called to Olathe to investigate some cases of suspected glanders, and on Tuesday he was called to Topeka to advise with the State Live Stock Sanitary Commission.

The following members of the Faculty will take turns at conducting the morning chapel exercises this fall term: Professors Brink, Calvin, Eyer, Kammeyer, McFarland, McKeever, Mayo, Minis, Nichols, Price, Remick, Ten Eyck, and Walters.

Doctor Mayo returned last week from Denver, where he attended the annual meeting of the Interstate Live Stock Association as a representative from Kansas. The principal subject under consideration was the question of the means to be taken to prevent the spread of scab or itch in cattle, and to stamp out the disease.

By special invitation, the Franklin Literary Society repeated their play, "The Last Loaf," last Saturday night at the Manhattan opera-house, for the benefit of the W. C. T. U. The house was well patronized and netted the Union a snug little sum.

The Farm Department is making a careful selection of seed corn of several of the standard varieties. Some thirty bushels have been selected, and a limited quantity of this will be for sale for farmers who wish to try some of the strains of pure-bred corn.

The soil is too dry to sow wheat, and pasture is getting short. An abundance of late forage, such as corn, cane, Kafir-corn and cow-peas are very convenient to have at this time in feeding the stock and dairy cows, to take the place of the diminished supply of pasture.

Mrs. Paull returned last week from an extended visit in the East. It is reported that she has entered a protest against the Professor's recently developed habit of shaving his upper lip. The Paulls will board and room at the Cole residence, south of the College.

The last number of the *Kansas Farmer* contains nine different editorials written by members of the Faculty of the Agricultural College, a lengthy clipping from the *Industrialist*, and a two-column article on "A Kansas Cheese Factory," by Chas. Bull, a graduate of our Dairy Short Course.

The last number of the *Students' Herald* contains pictures of Professor McKeever, Superintendent Rickman and the theatrical team of the Franklin Literary Society which rendered "The Last Loaf" in College chapel on Saturday night of last week. The pictures—half-tones—are unusually good.

Professor Dickens returned in time for the opening of College from an extended trip in the East. He attended the American Pomological Society, at Boston, and visited with Prof. F. A. Waugh, at Amherst, Mass. Mrs. Dickens and child did not return with the professor, but stayed at Cape Cod beach for a short visit.—*Herald.*

Late-planted forage crops have made a remarkable growth and yield. Cane yielded twelve tons of green forage per acre, which was put in the silo. Kafir-corn yielded thirteen tons per acre. A plot of sowed cane yielded at the rate of fifteen tons of green fodder per acre. Cow-peas sown broadcast yielded nearly six tons of green fodder per acre.

During the past three weeks the two silos, having a capacity of one hundred tons each, have been filled with different fodder crops. An experiment is being made by the Animal Husbandry and Farm Departments in determining the value of the several fodder crops for silage. The silos have been filled in sections with corn, Kafir-corn, cane, cow-peas, and a mixture of cow-peas and corn, and also a mixture of alfalfa and corn.

Owing to the prevalence of glanders in the Kansas Cities, the Live Stock Sanitary Board placed the eradication of the disease entirely in the hands of Doctor Mayo, who has spent most of the time for the past four weeks in the work. Doctor Mayo has been successful in his efforts and the disease has been practically eradicated from Kansas City, Kan.

Miss Nettie Wayland, member of the senior class in the domestic science course, who is temporarily doing assistant work in the domestic science department at Colorado Agricultural College, writes to Superintendent Rickman that she is charmed by the climate and scenery of Colorado, but intends to return to Manhattan to finish her course and take the degree.

During the summer vacation Doctor Mayo put in most of his time as State Veterinarian in investigating diseases of live stock in all parts of the State. As veterinarian to the Experiment Station, he spent some time in the western part of the State dipping cattle for the purpose of testing the value of various commercial and home-made dips in the treatment of cattle scab or itch.

The new Dairy Hall is beginning to loom up. Six of the window-frames are set and much of the stone-work is completed to the height of about ten feet. Contractor Winter worried about the window- and door-frames, which were ordered from a planing-mill in Kansas City but upon arrival last Friday proved inferior in make. He is now building the frames in his shop in Manhattan.

President Nichols has received a copy of special order No. 37, of the United States War Department, dated September 28, 1903, which reads: "By direction of the President, First Lieutenant Pearl M. Shaffer, Thirteenth Infantry, is detailed as professor of military science and tactics at the Kansas State Agricultural College, Manhattan, Kan., and will report in person at the College for duty accordingly."

Four different methods were tried during the past season in growing corn and cow-peas together as a forage crop. The one which succeeded best was the one in which the corn and cow-peas were mixed together about half and half and planted in drill rows late in the season, on June 25. Early plantings did not do so well. Cow-peas need warm weather to germinate and make rapid growth. Sowing the cow-peas and corn broadcast did not succeed so well as planting in drill rows.

The daily press brings news that some one entered the livery stable of B. W. Conrad, Sabetha, Kan., at night, and poisoned his best team. One of the animals is dead and the other will probably die. This makes a record of seven horses that Mr. Conrad has lost in the same manner, one of which was a stallion valued at $2,000. Mr. Conrad is a former student of the State Agricultural College, who has built up a prosperous livery business in connection with his operations in horse breeding, and his many friends will be sorry to learn of his misfortune.—*Kansas Farmer.*

The Farm Department is corresponding with different firms relative to securing a corn husker in order to take care of the large amount of corn which has been cut up on the farm. There is no reason why corn stover should not be used more for feeding stock in Kansas as well as in other large corn-producing states. In Wisconsin, Illinois, and Iowa a large part of the corn crop is cut up and shocked, and husked with the husking machines, and the stover makes a very valuable roughage for all kinds of stock. A combination of alfalfa and corn stover should make a well-balanced fodder ration.

Our townsman, C. P. Dewey, is bound to make something of his "Eureka Summer Resort," near Manhattan. Work was begun this week on the new Union Pacific depot. It is to be a standard depot and will be one of the prettiest on the line. The instructions for painting it are that it shall not have a color of any other Union Pacific depot. The body will be white and green. The Eureka Lake depot will be built over one half mile further from Manhattan than the stopping station has been. The new wagon road to the depot crosses Wm. Wood's land, thus shortening the distance from Eureka Lake Hotel to the station.

ALUMNI AND FORMER STUDENTS.

Grace M. Clark, '92, Disputanta, Ky., is the author of a story in the *Christian Endeavor World*, entitled "Missionary Fence Corners."

J. M. Scott, senior student 1903, has been elected assistant in agriculture in the New Mexico Agricultural College and Experiment Station.

G. F. Farley, '98, is studying oratory in the Emerson School of Oratory, at Boston, Mass. Mrs. Farley and their two little daughters remain at Melvern for the present.

J. B. Norton, '97, of the Bureau of Plant Industry, United States Department of Agriculture, visited the College recently. He has not fully recovered his strength from an attack of typhoid fever.

On September 15, at Seattle, Wash., Frederick Ellsworth Rader ['95], of Sitka, Alaska, and Miss Gertrude Hughes Spiers were married. The happy couple have gone to Sitka, where they will be glad to welcome their friends. These young people have the best wishes of Fred's many friends in Riley county.—*Nationalist.*

At the recent irrigation congress in Utah the delegates visited the agricultural college at Logan, and among other forms of entertainment the visitors were given a banquet, apparently under the superintendance of the domestic department, which is under the able administration of Dalinda Mason-Cotey, '81. Nearly a thousand were seated.

E. C. Thayer, '91, is now teacher of manual training in one of the Denver, Colo., high schools. His address is 2477 Dunkeld Place, Denver, Colo.

W. E. Mathewson, '01, assistant in chemistry for the last two years, was promoted to the rank of instructor at the last meeting of the Board of Regents. This is a fitting recognition of Mr. Mathewson's industry and ability.

The friends of C. A. Scott, '01, will learn with surprise and pain of the sudden death of his bride, Laura Davidson-Scott. Mr. and Mrs. Scott were married September 9, and were spending their honeymoon in Colorado. Mrs. Scott died of hemorrhage of the lungs, at Colorado Springs, September 28. The sympathy of all is with her husband and other relatives.

Florence H. Vail, '01, was elected assistant in chemistry at the last meeting of the Board of Regents. Miss Vail was a graduate student and student assistant in the Chemical Department last year and did very creditable work in both capacities. With the changes in the course of study the laboratory work required of students in chemistry is nearly doubled, and the department is fortunate in securing Miss Vail to give the additional assistance made necessary.

C. P. Hartley, '92, assistant in physiology in the plant breeding laboratory of the Bureau of Plant Industry, is the author of Farmers' Bulletin No. 174, on Broom-corn. It includes a description of the plant, considerations concerning the importance of good seed, directions for planting, cultivating, harvesting, and further treatment, and will be a valuable bulletin for distribution to many of the farmers of this State, as information on this subject has not been available heretofore.

F. A. Waugh, '91, professor of horticulture of the Massachusetts Agricultural College, is the author of a book on Systematic Pomology, issued by the Orange Judd Company. Notwithstanding the apparent dryness of the subject, Professor Waugh's racy style gives it attractiveness even to the non-elect. The book possesses a feature of special interest to the members of this institution, in that it is dedicated to Professor Popenoe in the following words, concerning which no comment but commendation could be made: "One of my teachers, above all others, is responsible for my love of taxonomic science. And, as for that, the same one laid the whole foundation for my love of general horticulture. This man has never received the praise rightly due him for his efforts in behalf of his students—of whom I am but one among hundreds. I know I have been no special credit to him; and, like many of the others, I have seemed unappreciative. Now, however, as I am about to publish a book, the inspiration for which came long ago from him, I wish to acknowledge my sense of indebtedness to him and my personal esteem for Edwin A. Popenoe, formerly professor of horticulture and entomology, now professor of entomology, in the Kansas Agricultural College."

KANSAS STATE AGRICULTURAL COLLEGE

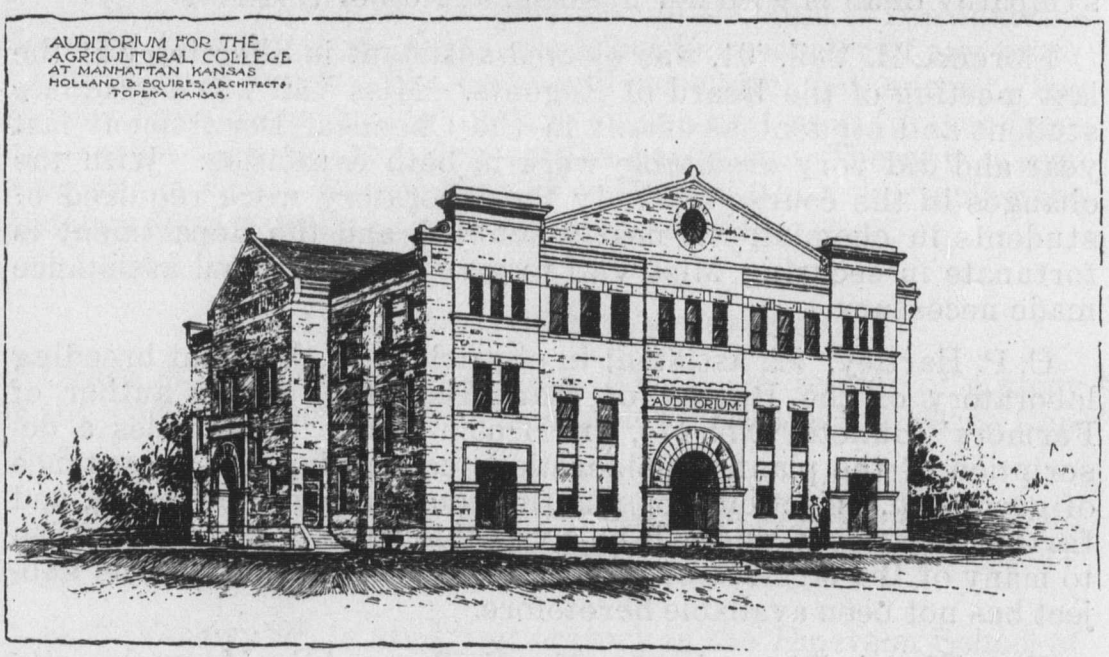
FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

1—Agriculture
2—Domestic Science
3—Mechanical Engineering
4—Electrical Engineering
5—General Science

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



The New Auditorium.

COLLEGE CLASSES are open to both sexes. Tuition is free. An incidental fee of $3 per term is charged all students from Kansas. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between $100 and $200. All College laboratories and class rooms are well supplied with needful apparatus and appliances. A preparatory department is maintained for persons over eighteen who cannot pass the common-school branches.

All Common School Branches

Are taught each term, and nearly all of the first- and second-year subjects; so that it is possible for one to get nearly all subjects of the first two years by attendance during winter terms only.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

1—Apprentice
2—Domestic Science
3—Dairying
4—Agricultural

For catalogue or other information, address

ERNEST R. NICHOLS, A. M., PRES.
MANHATTAN, KANSAS.

Historical Society

VOL. 30 NO. 4

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
JOHN D. WALTERS, M.S. (K. S. A. C.).....Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet).....Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.).....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.).. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York)...Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agriculture, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B.S. (K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University).....Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A..Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.).....Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami).....Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.).....Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.).....Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.).....Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.).....Secretary

JACOB LUND, M.S. (K.S.A.C.).....Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave....Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal).....Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University)....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.).....Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering

Miss Ada Rice, B.S. (K.S.A.C.).....Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.).....Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale).....Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.).....Assistant in Music
William Anderson, B.S. (K.S.A.C.).....Assistant in Mathematics
Miss Gertrude Barnes.....Assistant Librarian
William Baxter.....Foreman of Greenhouses
Louis Wabnitz.....Foreman of Machine Shops
Ernest C. Gasser.....Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School).....Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.).....Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music).....Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.).....Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.).....Assistant in Entomology
Leslie F. Paull, A.M. (Brown University).....Assistant in Botany
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.).....Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.).....Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.).....Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.).....Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn).....Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago).....Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.).....Assistant in Drawing
Miss Flora Rose (Farmingham Mass. Normal).....Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.).....Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern).....Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College).....Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K.S.A.C.).....Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A C.).....Assistant in Chemistry
Robert E. Eastman, B.S. (K.S.A.C.).....Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K.S.A.C.).....Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.).....Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.).....Bookkeeper
Miss Matilda Doll.....Clerk in Post-office
Miss Mamie Alexander, B.S. (K.S.A.C.).....Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.).....Clerk in Botanical Department
Charles Hughes.....Secretary to the President
William R. Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., OCTOBER 13, 1903. NO. 4

FARMERS' INSTITUTES.

THE farmers' institute as a factor in rural advancement has come to stay. Its importance has recently been recognized by the appointment of a special agent of the United States Department of Agriculture to have charge of a study of the means and methods by which this work may be extended and strengthened. In this State appreciation of the value of the institute was shown by the legislature of 1903, in the passage of the following law:

AN ACT

RELATING TO FARMERS' INSTITUTES.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. Whenever any county farmers' institute association in this State shall have elected president, vice-president, secretary and treasurer, and adopted a constitution and by-laws for its government, it shall be the duty of the county commissoners of such county to appropriate annually the sum of fifty dollars, or so much thereof as may be necessary, to defray the legitimate expenses of a two-days' institute at such place in the county as may be designated by the executive committee of the institute association; provided that this act shall not apply to institute associations that have not been in successful operation at least one year.

SEC. 2. This act shall be in force from and after its publication in the statute-book.

It will be seen that this act recognizes the value of continued activity in this respect, and requires a demonstration of earnest intent, as shown by the maintenance of an organization for at least one year before public funds can be drawn upon for its support. With such an earnestness of purpose, and with ample financial aid thus provided, any locality in the State can maintain a successful and highly beneficial organization.

Probably no other arts show a greater range of quality in their execution than those of agriculture, and of house-keeping. In no other than rural communities is there such need of special provision for social meetings. In no other occupation than farming are the pleasures and advantages less appreciated by the younger element. In no other art is there such a combination of all of the

sciences as in that of agriculture. Here we see sketched a broad field which the farmers' institute can work, and which if properly cultivated cannot fail to yield handsome returns. A well-sustained institute organization should improve the farm practice of the neighborhood, lighten the household cares, afford opportunity for social intercourse, awaken the young to the inherent charm of rightly managed rural life, and give both practical assistance and intellectual satisfaction by study of the scientific principles underlying the natural processes in continuous operation on the farm.

The College takes no part in the organization of institutes, or in their management except by way of advice. To bring an institute to a successful issue requires at least one man who will give special attention to arousing an interest in it, and to securing speakers or writers from among the farmers of the vicinity and their wives. No person's name should be put on a program except with his knowledge and consent, and with the understanding that he will present the subject assigned. It is not necessary to have many papers, or addresses; two or three at each session are ample if they are well discussed. The discussions are the most important part, and the presiding officer should use his best effort to draw these out. The most successful institutes are held in localities where a long standing organization of farmers exists through which people have acquired a freedom in speaking that comes only with practice. When such an organization does not exist, special efforts are necessary to develop the power latent in any community and draw out the valuable comments that any group of intelligent farmers and their wives can make. In arranging the program it is well to name one or two to open the discussion on each paper. The young people should be enlisted in the work for the benefit that they will derive from it, and because the advancement of the future rests upon them.

The farmers' institute that leaves out the farmer's wife and daughter misses half its possibilities. The work and thought of women on the farm is fully as important to its financial success as that of men, and far more important for the health and happiness of all the family. An institute should give some definite attention to woman's interests, and the College recognizes this by sending ladies of the Faculty to places where their presence is desired, if it is possible to do so. Home sanitation, planning the

house, beautifying the surroundings, and devising means of avoiding the narrow rut of humdrum existence, are as proper subjects for discussion as are cooking, cleaning, mending, poultry-keeping and dairying.

The College has been giving assistance to farmers' institutes for many years, in fact throughout almost its entire history. It recognizes the importance of this work, and wishes to encourage its legitimate development. The most fundamental principle underlying its attitude is the belief that most of the good growing out of institutes is due to free discussion of topics of interest to farmers by the farmers themselves. It believes in helping those who help themselves, and will gladly add to the interest and value of an institute by sending free of charge such speakers as it can to contribute to the program. It does not, however, desire to send out lecturers to attend meetings in which the farmers themselves have no part other than that of listening. It is expected that at least half of the papers or addresses on the program will be furnished by the people of the locality in which the institute is held. In addition to these a pleasant diversity may be added by providing several selections of good music, and possibly an occasional recitation.

Localities desiring assistance from the College should make application from one to two months in advance if possible, so that the necessary plans may be made. Expense is saved if institutes can be so timed as to enable speakers to attend several on a single trip, and early requests enable the College to make such plans when desirable. As far as possible the application should state (1) the organization, if any, in connection with which the institute is to be held; (2) the place of meeting, including the name of the hall or grove in which the program will be given; (3) the date near which the institute is desired, or the exact date if that is of special importance; (4) the extent to which the people of the vicinity will contribute papers or addresses. In addition, if there are special topics which it is desired that the College speakers shall treat, it is well to mention them, though with the large demand for speakers and the limited time that each can be absent from regular duties, it is not always possible to send the specialist desired. For the same reasons and others it may be impossible to allow a locality to name the person to be sent. The College officers taking part in institute work are not of equal experience,

and the best cannot be sent to every place, but it is believed that each will give something of practical value in rural life, and as far as possible the needs of the locality will determine who shall be sent.

The College prints free of charge, posters and programs for each institute in which its officers take part. The posters are sent as soon as the date is fixed, and should be displayed conspicuously throughout the surrounding region. The programs are printed as soon as the copy is at hand. At as early a date as practicable this should be sent in, and should show the date and place of meeting, the time of day for the opening of each session, and the exercises. Great care should be taken to spell the names of participants correctly and write them very clearly. The printed programs will be furnished in ample numbers and can be used in creating interest in the meeting. On this account special effort should be made to have them printed early. In addition to these means of advertising, announcements should appear weekly in the local papers. These should detail the progress of arrangements, and finally give the entire program, and ought to be accompanied by short paragraphs on the interest and value of such meetings.

The value of an institute is not measured by the number of people who are caused to assemble on the date thereof. In too many instances picnic gatherings or celebrations with which an attempt has been made to include a farmers' institute have been total failures in the latter respect because of the disturbing effect of games and commercial enterprises and lack of proper management. It is possible to conduct a picnic institute successfully, but it is difficult to do so. Addresses and discussions are always presented under more favorable conditions in a hall, than out-of doors. In out-of-door meetings, the seats must be placed near to the speakers' platform, and all disturbing features, such as merry-go-rounds, ball games, refreshment stands, etc., must be kept absolutely inactive while the institute program is being rendered. College institute workers will feel justified in refusing to speak unless quiet is maintained. On the other hand, exhibits of farm products of all kinds, especially new or improved varieties, are always instructive and add much to the interest of the occasion. Household products may also find a place in such exhibits. Arrangements can be made for special demonstrations in

stock or grain judging, the necessary exhibits for which are valuable object-lessons.

The worst institute is one in which only the men meet to hear speakers from away tell them how to get more dollars for less effort, and then disperse without any discussion. The best institute is one in which men and women, old and young, meet to consider not only means of making farm life more profitable, but also of making it happier, more intellectual, and more elevating. In this consideration the people of the locality are the chief factors, the speakers from elsewhere merely lending greater interest to the occasion and perhaps approaching some points with greater knowledge and broader experience. J. T. WILLARD.

FACULTY STANDING COMMITTEES, 1903-'04.

MEMBER.	Assignments.	Athletics.....	Examinations	Farmers' Institutes.....	Graduate	Industrialist.	Library.....	Public Exercises.....
Walters			M			M		
Brown								M
Willard				C	M	M		
Popenoe				M	C		M	
Remick	C				M			
Eyer	M				M			
Roberts		M						
McKeever	M							M
McCormick					M			
Mayo		C		M			M	
Dickens				M				
Brink	M						M	M
Ten Eyck				M				
Erf					M			
Price			M				M	
Kammeyer		M	M					C
Calvin	M				M			
Rickman						C		
Jones	M							M
McFarland		M	C					
Minis							C	
Fearon		M						
Rupp	M							
Halstead			M					
Anderson	M							
Rice	M							
Holroyd	M							
Short	M							
Thompson			M					
Hopps			M					

FALL TERM PROGRAM, 1903, SHOWING INSTR

INSTRUCTOR.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.
Walters	Projection....32	Projection....39	Des. Geom.[1]....7 / Farm Arch.[1]....28	Geom. Drawing...12 / Specials....6
Evans	D. S. Drawing....29	Object Drawing..18	Geom. Drawing[1] 18 / Obj. Drawing[1]..13	Color & Design...32
Weeks	Freeh'nd Drawing 22	Freeh'nd Drawing 14	Freeh'nd Drawing 9	Freeh'nd Drawing 15
Brown	Singing, Notation, Orchestra, etc			
Brown, R. H.	String and Band Instruments			
Harris	Piano			
Willard*	An. Nutrition....26	Human Nutrition.56		
Mathewson	Adv. Qual. Analysis....3			Chemistry I....35
McClenahan	Chemistry I....32	Chemistry I....26	Chemistry I....41	
Vail				
Popenoe*		Entomology....21	Entomology....23	Specials....3
Dean*	Entomological Laboratory, Monday			6
Scheffer				Zoölogy....18
Remick	Anal. Geometry..33	Trigonometry....25	Algebra III....38	Algebra III....45
Halstead	Geometry I....28	Algebra III....41	Bookkeeping....41	Trigonometry....33
Anderson	Trigonometry....28	Algebra II....49	Algebra III....38	Geometry I....16
Shaw	Algebra II....36	Geometry I....29	Trigonometry....46	Algebra II....29
Eyer	Elec. & Mag....14	Dynamo Lab. Monday	13	Elec. & Mag....13
Hamilton	Physics I....32	Physics I....38	Physics....29	Special....1
Booth		El. Physics....23	El. Physics....26	El. Physics....28
Roberts*...	Botany....47	Botany....55		
Paull*			Botany....52	Botany....57
McKeever	German....20		Econ. Principles..30	History of Ed....8
McCormick	Steam Eng....11			
Paul	Mach. Des. M....10	Appl. Mechanics..22	Mach. Des. M....10	Steam Eng....12
House	Woodwork....44	Woodwork....40	Woodwork....41	Woodwork....42
Wabnitz	Machine Shop, Monday P. M....15		Apprentices	9
Ridenour	Foundry, Monday			12
Gasser	Blacksmithing II, Monday A. M....19		Blacksmithing I Monday, P. M....21	
Dearborn		Pw. Trans., (3 d.) .12		
Mayo*	Veterinary Sci. I 25		Hyg. Farm An. 1..28	
Barnes*	Physiology....44	Physiology....14	Physiology....18	Bact. T T 20, W F 35
Dickens*	Horticulture....28	Horticulture....27	Denarology....3	
Eastman*	Pomology....4		Pomology, 7:50 A. M	4
Brink	Classics....28	Readings....37	Rhetoric II....51	Rhetoric II....52
Rupp	Classics....36	Composition....41	Composition....37	Classics....34
Rice	Composition....38	Grammar A....31	Readings....36	Classics....32
Hopps	Rhetoric I....39	Rhetoric I....40	Structure....34	Composition....38
Ten Eyck*	Agriculture....47		Farm Man....20	
Calvin	Hygiene (S. 1:30) 119	Home Sanitation.35	Domestic Science Short Course....17	
Rose		Domestic Science 16	Domestic Science Short Course....20	
Pancake	Laundering....18	Domestic Science 16	Domestic Science Short Course....12	
Price	Gen. History I....37	Gen. History I....42	Econ. Principles..37	Gen. History I....36
Kammeyer			Oratory I....15-21	Oratory I....13-17
Erf*	Dairying....20		Stock Breeding... 1	
Kinzer*				Live Stock....16
Rickman	Printing			
Rodell	Printing....3	Printing....1	Printing....7	Printing....1
Jones	Sewing III....13	Sewing III....12	Sewing I....23	Sewing I....24
Cowles	Sewing I....17	Sewing I....18		Sewing II....14
Coe	Sewing I....18	Sewing I....13		
Stump				
McFarland	Bookkeeping....50	Bookkeeping....44	Bookkeeping....44	Bookkeeping....52
Holroyd	Arithmetic B....36	Algebra I....38	Algebra I....38	Arithmetic B....37
Short	Algebra I....36	Grammar B....32	Grammar B....27	Arithmetic A....47
Thompson	History A....24	History B....34	History B....54	Geography....37
Fearon	Calisthenics			
Vandivert		Grammar A....30	Composition....42	
Goodwin	Algebra I....38	Composition....43		
Christensen				Algebra I....36
Reynolds				Algebra I....30

*Experiment Station work.
[1]Every other day.

Morning Class Hours (Tu. W. Th. F. S.).
1. From 9:05 to 9:50.
2. From 9:55 to 10:40.
3. From 10:45 to 11:30.
4. From 11:35 to 12:20.

RUCTOR, SUBJECTS, AND NUMBER IN CLASS.

Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.
El. Projection....Tu., 23;	Geom. Drawing.....Th., 22		
Freehand Drawing.....W., 43			
Object Drawing.....Tu., 26; W., 32; Th., 29; F., 28			
Freehand Drawing.....Tu., 59; W., 53; Th., 53; F., 48			
Advanced Inorganic Chemistry..... 7:50, 5			
Analytical Chemistry.....45			
Chemical Laboratory.....Tu. & Th., 61; W. & F., 67			
Chemical Laboratory.....Tu. & Th., 61; W. & F., 67			
Entomology Laboratory.....Tu., 12; W., 12; Th , 13			
Zoölogy Laboratory.....15			
Physics Laboratory.....29			
Electrical Measurements....Tu. & Th., 7; W. & F., 7			
Physics Laboratory.....70			
Physics Laboratory.....79			
Psychology.....7:50 A. M , 16			
Engineering Laboratory.....10		Ag. Mechanics.....24	
Mechanical Drawing.....Friday, 16			
Woodwork.....Tu. & Th., 36; W. & F., 31			
Machine Shop.....Tu. & Th., 6; W. & F., 5		Machine Shop.....Tu. & Th., 16; W. & F., 12	
Foundry.....Tu. & Th., 14; W. & F , 14		Foundry.....Tu. & Th., 10; W. & F., 2	
Blacksmithing.....Tu. & Th., 21; W. & F., 21		Blacksmithing.....Tu. & Th., 19; W. & F., 8	
Mechanical Drawing.....Tu., 11; W., 14			
Hygiene Lectures.....		7:50 A M., Tuesday, 239	
Bacteriology Laboratory.....55			
Horticulture Industrial.....Tu. & Th., 10; W. & F., 4			
Dom. Sci. I. ..W. & F., 23 / Dom. Sci. I..Tu. & Th., 21	Domestic Science Lab.....Tu. & Th., 9; W. & F., 12		
Domestic Science I Laboratory.....		Tu. & Th., 12; W. & F., 10	
Laundering.....Tu. & Th., 22; W. & F., 19			
Chapel Rehearsals..			
Dairy Laboratory.....		Monday, 20	
Stock Judging.....			Monday
Printing.....19			
Dressmaking.....20			
Sewing, Domestic Science Short Course.....14			
Sewing, Domestic Science Short Course.....14			
Chemical Laboratory.....Tu. & Th , 61; W. & F., 67			

Afternoon Industrial Hours (Tu. W. Th. F.).

5. From 1:30 to 2:30.
6. From 2:30 to 3:30.
7. From 3:35 to 4:35
8. From 4:35 to 5:35.

THOROUGHNESS OF PRIMARY WORK IN MUSIC.

THERE can be no question in regard to the kind of work done by the more conspicuous teachers and leading conservatories. The grade has been steadily rising during the last few years. The most scientific methods have been sought and formulated and in most cases rigidly applied, with satisfactory results. But how is it with the great body of teachers more obscure—the private teachers who are found on almost every street? A very interesting subject for investigation would be the progress of thorough methods of teaching in the country at large. The impression exists among those who have the best opportunities for observation that there has been a general toning up all along the line, and that the preliminary work is being done much better than formerly.

The increasing efficiency of the public schools, and so many helps to the isolated, remote teachers, such as the many musical magazines, the publication of graded courses, treatises, etc., have done away with any excuses for unintelligent, haphazard teaching. Every year there are large numbers of well-trained pupils from high-class teachers and schools, at home and abroad, who go into scattered fields and spread good taste, sound methods and new ideas.

Among those best fitted to judge of the tendencies in primary work, whether for good or bad, is the teacher in the large conservatory, the majority of whose pupils come from country districts, and by observing those assigned to him and comparing notes with his colleagues he may, in the course of a few years, form a pretty fair estimate of the matter.

The curse of superficiality still exists to plague the honest teacher. Again and again students come to him from incompetent or indolent instructors, and he must go over and over the same old ground work, the rudimentary principles of touch and fingering, rhythm and technic, explaining those proper habits of study and practice which must be acquired before any true progress can be made.

Musical performance and study has not been thought of as a matter of scholarship, in which accuracy is just as binding as in the study of mathematics, but rather as a somewhat vague means of pleasurable impressions. The ear has not been trained to notice false tones or false time, the fingering has been allowed to go at

random; even with the good will on the part of the student, there has been no teaching of the degrees and number of stages that divide the path to perfection, and he has never learned that close attention to details, precision in reading and accuracy in reproducing all the notes and symbols are at all necessary.

Talent, of course, can not be made, and the teacher is not responsible for the lack of it; but careless or bad habits of study may spoil the best talent, and shiftless teaching is mainly responsible for this. The list of bad habits is a large one. Among the most common and one of the worst faults is practicing too fast. It would seem that pupils might be taught to practice slowly and accurately, yet there are not many who are accustomed to do this. Another error is in looking at the keyboard for every change in position of the hand, and so be unable to play the simplest thing with the eye on the printed page. Another mistake is in permitting the pupil to stop at every wrong note without playing the phrase or passage over again to avoid the almost incurable habit of stumbling.

The pupil should be taught a variety of touches, for in doing so it relieves the monotony that would come from legato practice alone. The various kinds of touches develop and give strength to the fingers and wrist more rapidly than just one form, by giving each set of muscles in finger and hand an equal share of exercise from the beginning. The pupil also gets a better idea of a perfect legato by contrasting it with other kinds of touch. Concentration is learned and the thinking powers increased.

A noted educator says: "The greatest need in musical education is teachers; not persons to sit by while pupils play through a lesson, nor trainers of finger gymnastics, nor 'human pianolas,' but teachers who are acquainted with the minds of students and with the science and art of teaching, no less than the art of music and its performance."

In order to meet this, there should be more emphasis put on music as an art than upon technic and performance. We need to raise our ideas of music as a means of expression and an avenue of culture.

There are many so-called systems nowadays, especially for children. Any system ought at least to contain the following merits: To aim at music, to train the hand, to train the ear, to train the eye in musical notation, to form the habit of playing

everything well. It is a common mistake to believe that children can do as much work as grown people, and that the more they study the more they learn.

The key-note of music education is self-study, and teachers must train their pupils with this in view if they wish them to make successful progress. They must strive to develop in the pupil a love for both technic and interpretation as two separate and distinct branches of education.

The acquirement of music is regarded by some as a luxurious accomplishment to be added to one's education if circumstances will permit. So long as it is regarded simply as an ornamental luxury, having no educational value, making no demands on the mental faculties, we may hope for little improvement in this line among the masses.

Many suppose that the ability to sing or play is acquired for the most part by imitation and requires no mental effort. Some one has said: "The proper study of music as a science and an art is more educational in its effects upon the mind than the pursuit of any other one study in the whole realm of science, art or literature." Music certainly occupies an important place in the development of the child. It stimulates mental activity, produces concentration of thought, and calls forth all the good in the child's nature. It is better to be a sericus, scholarly worker, than a showy, drawing-room pianist, for the habits of self discipline and the development of ideals of thoroughness will be carried into the other relations of life.

The future of music in this country is not in the hands of the Masons, nor the MacDowells, but in the obscure neighborhood and small seminary teachers who form the early habits of work and lay the foundation for the building of others.

R. H. BROWN.

Miss Fearon, teacher of calisthenics, reports her department in a very prosperous condition. There are two hundred forty-five young women enrolled for physical training this fall. Ten of these are taking the work to fit themselves for teaching, fourteen are short course girls who take calisthenics by special permisson, and four are special students. The young women meet in five large classes daily, and seem to be very enthusiastic over their success and progress. During the summer the department added fourteen sets of stall bars to its equipment.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Miss C. Jeanette Perry went to Topeka on Saturday to visit friends over Sunday.

Prof. Theo. Scheffer was called to Delphos Tuesday by the serious illness of his father.

The senior class in veterinary science witnessed the firing of a case of bone spavin last Wednesday morning.

Doctor Mayo reports meeting W. S. Arbuthnot, '91, on a train recently. Doctor Arbuthnot has a wife, two children and a drug store at Lebanon, Kan., and is doing a prosperous business.

Miss Deming, stenographer for the Veterinary Department, is spending a few days at Kansas City, visiting with the family of Doctor Kinsley.

Miss S. Cornelia Weeks, second-year student in 1897-'98, graduated from Teachers' College, last spring and is now teaching domestic science in Saratoga Springs, N. Y.

The pay roll for September amounted to a total of $8875.48. Of this the officers received $6149.15 and the students and employés $2726.33. Over $10,000 were spent in building operations.

The Veterinary Department recently received a letter of twenty-nine pages, averaging three hundred words to the page, or a total of eighty-seven hundred words on the subject of swine plague.

Mrs. C. H. St. John, the well-known W. C. T. U. lecturer, of Salina, Kan., accompanied by Mrs. S. A. Perry, of Manhattan, spoke to the students from the chapel platform on Saturday after the morning exercises.

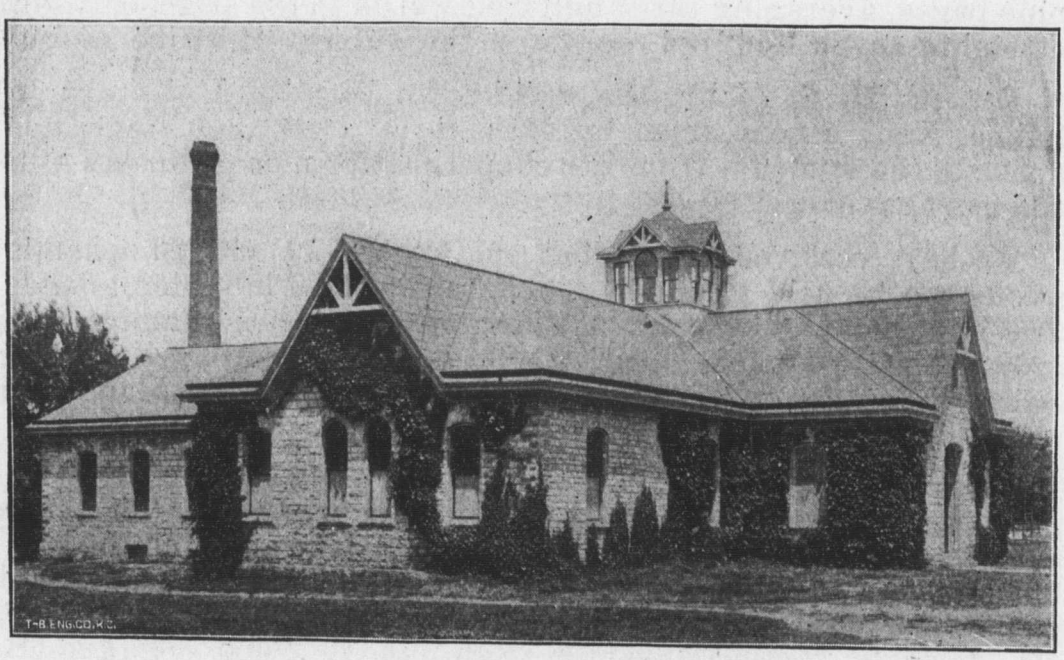
We have received notice that on October 19 and 20, examinations will be held to supply teachers for the Philippine Islands. One hundred fifty teachers are wanted at salaries ranging from $900 to $2000. The examination may be taken at either Topeka or Salina. Further information can be obtained at the Manhattan post-office.

Regent Brock and President Nichols attended the river improvement congress at Kansas City last Thursday, the former as a delegate from the city and the latter as a delegate from the commercial club. While there they met B. L. Short, '82, assistant postmaster, delegate from Kansas City, Kan.; M. W. Sanderson, '98, delegate from Marysville, Kan.; H. G. Pope, '94; and B. Dougherty, '96.

The Printing Department has received this week a shipment of 12,000 pounds of book paper, costing $520.90. This is the second large shipment received this year. It does not include linens, flats, poster paper and covers, and the supply will be exhausted long before the close of the College year. The quantities of paper used is an index to the amount of work done in Superintendent Rickman's busy shop.

Professor Erf has been officially notified that his general plans concerning the glass cases for exhibiting the dairy industry of America, in the Agricultural Building at the St. Louis Worlds' Fair, have been accepted. There will be two cases, each about one hundred feet long. In one will be exhibited the processes of butter and cheese making; in the other the methods of sterilizing and preserving dairy products. The designs of the professor were selected from among the plans of ten or more competitors and are being elaborated and detailed now by the advanced students in drafting.

V. E. Johnson retired from the office of county treasurer last Monday, having held the office two terms. During that time there has been the most perfect satisfaction with Mr. Johnson's conduct of the office, and he retires with the best wishes of many friends that he has made in that time in this end of the county and elsewhere. A better man to succeed him could not be found than the treasurer elect, J. C. Christensen ['94]. He knows the office from his service in it as deputy, much of the time having entire charge in the absence of Mr. Johnson. He is exact and careful in his methods of business and keeping records, and his ambition is to win the respect and good-will of all whom he meets in a business way. The office will continue in capable hands.—*Nationalist.*



Women's Gymnasium.

ALUMNI AND FORMER STUDENTS.

Sadie Moore-Foster, '94, of Seattle, Wash., was an interested visitor at the College a few days since.

Chas. W. Shull, '97, writes that he will shortly locate at McAllaster, Logan county, Kan., on a dairy and alfalfa ranch of several sections in area.

F. D. Waters, '98, writes from Neame, La., asking for publications relating to agriculture. Although he does not say so, Mr. Waters is apparently farming in that state.

Word has just reached the editor that Carrie Donaldson-Brown, '84, died at Alamosa, Colo., in July or August, 1902. Her little daughter finds a home with relatives near Wakefield, Kan.

Minnie Reed, '86, is reported to be teaching in the public schools of Honolulu, H. T. Mattie Reed is teaching in the city schools of Phoenix, Ariz., where she has been employed for the last four years.

R. A. Oakley, '03, was a welcome visitor last week. He is now a scientific aid in the Bureau of Plant Industry and is in charge of coöperative work with farmers and stations in the states of the middle west.

A. F. Niemoller, '93, Wakefield, Kan., visited the College last week and caught up in knowledge of the changes that have taken place since his last call. Mr. Niemoller is planning to go into the milling business.

E. R. Barker and his wife, who was Edna Morrison, both second-year students in 1896, visited the College and friends last week. They required guides to enable them to find their way about. A charming little daughter accompanied them.

F. W. Ames, '94, and Ethel Patten-Ames, '95, Pittsburg, Pa., have been called to mourn the loss of their baby daughter, Dorothy, who died of pneumonia the 24th of last month. The sympathy of many friends will be with them in this bereavement.

Harold T. Nielsen, '03, writes from the Iowa Agricultural College, to Superintendent Rickman, where he is taking a graduate course. He thinks the students of our institution do not appreciate the opportunities and many superior advantages which they enjoy.

At the last meeting of the Board of Regents, Miss Ada Rice, '95, was promoted from assistant to instructor in the English Department. This is a deserved recognition of the efficient service which Miss Rice has rendered in the teaching of English for the last four years.

Guy D. Hulett, '98, has donated to the library a copy of "A Text book of the Principles of Osteopathy," of which he is the author. As a clear and somewhat comprehensive exposition of the principles underlying this method of healing, this book merits the attention not only of students of osteopathy, but of all interested in the causes and treatment of disease.

KANSAS STATE AGRICULTURAL COLLEGE

FIVE FOUR-YEAR COURSES OF STUDY

Each leading to the degree of Bachelor of Science, are as follows:

1. **Agriculture.**
2. **Domestic Science.**
3. **Mechanical Engineering.**
4. **Electrical Engineering.**
5. **General Science.**

This Institution is supported by the general government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.

All Common-school Branches are taught each term, and nearly all the first- and second-year subjects, so that it is possible for one to get nearly all subjects of the first two years by attendance during winter terms only.

FOUR SHORT COURSES

Open to students of mature age who cannot, for lack of time or money, take one of the four-year courses.

1. **Apprentice,** Shops, Printing, Dairying, 80 weeks.
2. **Domestic Science,** two fall terms of twelve weeks each.
3. **Dairying,** one winter term of twelve weeks.
4. **Agriculture,** two winter terms of twelve weeks each.

College Classes are open to both sexes. Tuition is free. An incidental fee of $3 per term is charged all students from Kansas. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothing and traveling, are between $100 and $200. All College laboratories, shops and classrooms are well supplied with needful apparatus and appliances. A preparatory department is maintained for persons over eighteen who cannot pass the common-school branches.

FALL TERM BEGINS SEPT. 17, 1903

For catalogue or other information, address

Pres. E. R. Nichols, - - Manhattan, Kan.

Historical Society

VOL. 30 NO. 5

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
JOHN D. WALTERS, M.S. (K. S. A. C.).....Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Oliv et)..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.).....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.).. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.)..... .....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York)...Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin)..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University).....Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A..Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.).....Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) .....Principal Preparatory Department
MISS MARIAN JONES, M.S. (K. S. A. C.).....Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K. S. A. C.).....Librarian
MISS ESTELLA M. FEARON, B.S. (K. S. A. C.).....Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K. S. A. C.).....Secretary

JACOB LUND, M.S. (K. S. A. C.).....Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave....Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal).....Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University)....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K. S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering

Miss Ada Rice, B.S. (K. S. A. C.).....Instructor in English
Walter E. Mathewson, B.S. (K. S. A. C.).....Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K. S. A. C.)..... Assistant in Music
William Anderson, B.S. (K. S. A. C.).....Assistant in Mathematics
Miss Gertrude Barnes.....Assistant Librarian
William Baxter.....Foreman of Greenhouses
Louis Wabnitz .....Foreman of Machine Shops
Ernest C. Gasser.....Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K. S. A. C.).....Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School).....Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) .....Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music).....Assistant in Music
Ambrose E. Ridenour, B.S. (K. S. A. C.).....Foreman in Foundry
Geo. A. Dean, B.S. (K. S. A. C.) .....Assistant in Entomology
Leslie F. Paull, A.M. (Brown University).....Assistant in Botany
Miss Emma J. Short .....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K. S. A. C.).....Assistant in Domestic Art
Miss Maud Coe, B.S. (K. S. A. C.).....Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A. & M.A.).....Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University)..... Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C.).....Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn).....Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago)..... .....Assistant in English
Miss Helen Thompson, B.S. (K. S. A. C.).....Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Farmingham Mass. Normal)..... ..Assistant in Domestic Science
Miss Clara Pancake, B.S. (K. S. A. C.).....Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) .....Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College).....Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K. S. A. C.)..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K. S. A C.)..... .....Assistant in Chemistry
Robert E. Eastman, B.S. (K. S. A. C.)..... Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K. S. A. C.) .....Executive Clerk
Miss Alice M. Melton, B.S. (K. S. A. C.).....Clerk in Director's Office
Miss Minerva Blachly, B.S. (K. S. A. C.).....Bookkeeper
Miss Matilda Doll.....Clerk in Post-office
Miss Mamie Alexander, B.S. (K. S. A. C.).....Clerk in Farm Department
Miss Sarah Hougham, B.S. (K. S. A. C.).....Clerk in Botanical Department
Charles Hughes.....Secretary to the President
William R. Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., OCTOBER 20, 1903. NO. 5

RACE SUICIDE.

RACE suicide has been discussed somewhat lately. Just what race suicide means the writer of this article does not know, but he thinks the meaning intended is that the human race is not reproducing itself in the same ratio as formerly, and consequently the tendency is toward ultimate extinction.

With this idea in view, the United States censuses from 1850 to 1900, inclusive, have been examined, and this paper shows a few of the results. The entire calculation has been confined to the white population, no reference whatever being made to the negro or colored people. The mortality lists are not considered.

In the United States census the term "colored" includes negroes, mulattos, Chinese, Japanese, and civilized Indians. It is possible that in some future article tables similar to these may be made with reference to the colored races and a comparison instituted.

Not only for convenience, but for other reasons, the following divisions of the United States have been made: Division A.—Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania. Division B.—District of Columbia, Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Missouri, Kentucky, Tennessee. This contains all the former slave states. Division C.—Ohio, Indiana, Illinois, Michigan, Wisconsin. These form the old Northwest Territory, from which slavery was forever prohibited. Division D.—Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Kansas, Indian Territory, Oklahoma. Division E.—Montana, Wyoming, Colorado, New Mexico, Idaho, Washington, Oregon, California, Nevada, Utah, Arizona. These constitute the Pacific coast and Rocky mountain states.

Why in any place there has been an increase or decrease of population the reader must judge for himself. Some suggestions

only are offered—no conclusion is reached—results as shown by the census are here presented.

The census of 1850 for California is not complete, some of the reports having been burned; others never reached the census office. Alaska is omitted.

TABLE OF APPROXIMATE AREAS (Square Miles).

Division.....	A	B	C	D	E
	169,000	895,000	249,000	447,000	1,188,000

DENSITY OF WHITE POPULATION PER SQUARE MILE.

DIVISION.	1850	1860	1870	1880	1890	1900
A.....	52.70	61.94	71.84	84.62	101.51	122.36
B.....	7.28	9.03	10.57	14.05	17.37	20.96
C.....	17.98	27.57	36.09	44.22	53.22	62.27
D.....	.44	2.19	4.71	8.73	13.84	17.39
E.....	.14	.46	.76	1.35	2.41	3.26
United States.....	6.63	9.13	11.39	14.72	18.65	22.65

Divisions A and C are constantly above, B below (except in 1850), D and E are constantly below the average. A increases most rapidly, E least. The reason is plain.

In the following table the rate per cent is computed as follows: The base is the total white population of the division, the percentage is the number of white children under five years of age—that is those born (and still living) during the last half of the decade which the census represents. To illustrate, the children of 1850 represent those born between June 1, 1845, and June 1, 1850; of 1860, those born between June 1, 1855, and June 1, 1860, etc., etc.

The children are thus counted for a period of fifty-five years, This period seems sufficiently long to throw some light on the subject.

PER CENT OF CHILDREN IN WHITE POPULATION.

	1850	1860	1870	1880	1890	1900
A.....	13.129	13.693	12.265	11.346	10.257	10.822
B.....	16.129	16.151	15.292	15.530	13.648	13.634
C.....	16.288	16.408	14.701	13.106	11.742	11.206
D.....	17.829	18.527	16.049	14.803	11.759	12.682
E.....	8.392	13.572	13.881	12.500	11.230	10.611
United States.....	14.813	15.297	14.051	13.593	11.767	11.893

It will be observed that divisions A and E are constantly under the general average; D above, except in 1890, when it was prac-

tically the same; C above the first half and below the last half; B at all times above.

The writer knows no reason why these t ings are so, yet A in a colder climate is largely a manufacturing section; E largely a mountainous region, some parts not of easy access, much waste and pasture land; D is chiefly a farming section; B is a milder climate, where nature is abundant in production, while the black element at hand seems not a deterrent.

These figures, although they show a largely decreasing rate from 1860 to 1890, and some increasing rates in 1900, and a total increase in 1900, do not indicate any race suicide, since A has twice, B more than twice, C has 2.4 times, D more than 28 times and E nearly 27 times as many children under five years of age in 1900 as in 1850. In short the children have increased between June 1, 1845, and June 1, 1900, from 2,876,458 to 7,941,108. Families may not now be as large as formerly, but as to general results—*nil desperandum.*

REMARKS.—Nothing has been said about males or females nor their comparative numbers. Some of these records are quite interesting. Some only of the results of this investigation are submitted in detail.

UTAH.—Here, in each particular decade, the per cent of children was greater than in any other division or in all. In 1850 the children were 19.1 per cent of the population; in 1860, 23.7 per cent. But in 1857 President Buchanan sent Albert Sidney Johnson with a regiment of regular soldiers (presumably to bring the blessings of United States civilization) to the territory. But from 1860 the output decreased gradually to 1890 when it had ebbed to 14.9 per cent, but rose in 1900 to 15.2 per cent. During this period the vendors of soothing syrup would seem to have had a depressed market.

RHODE ISLAND.—The smallest territorially and the densest in population has dropped the ratio of children from about 12 per cent to about 10.1 per cent, while the population has increased 191 per cent. Now, the state in 1850 had 143,875 white people, and 12 per cent of this number is 17,265, whereas she had at that time 17,327 children. In 1900 there were 419,050 white inhabitants, and 10.1 per cent of this number is 42,324 whereas she had 42,657 children at that time. Rate per cent does not tell all the story.

Families may not be so large, yet the greater number of fami-

lies more than compensate for the apparent deficiency in number of children.

NEW YORK AND PENNSYLVANIA.—The area of New York is to that of Pennsylvania as 1.087 to 1.

	1850	1860	1870	1880	1890	1900
Ratio of Population..	1.350	1.344	1.252	1.195	1.151	1.163
	1.000	1.000	1.000	1.000	1.000	1.000
Ratio of Children.....	1.176	1.206	1.063	1.018	1.002	1.041
	1.000	1.000	1.000	1.000	1.000	1.000

For forty years Pennsylvania constantly decreased the ratio of population. The ratio of the children, except in 1860, was decreased until 1900. In 1890 the ratio was almost reduced to unity, New York having only 1187 more children than Pennsylvania. New York has the largest urban population, Pennsylvania the largest mining industries. Perhaps crowded tenement houses have something to do with producing an equality of children, perhaps not. These two states have the largest population, hence the comparison.

VERMONT.—Vermont shows a constantly decreasing number of children from 1850 to 1890—in 1900 an increase of nearly 3000; but even then she had 4964 less than in 1850.

CENSUS OF 1870.—South Carolina had 1721 less white inhabitants than in 1860, Alabama 5047 less, Louisiana 4436 more, while the three states had 11,811 less white children than in 1860.

A writer said the South "was deficient in population" in 1870. But those were the days of the gay and festive carpetbagger, the times when the gentle Ku Klux kindly persuaded in his own innocent ways. Perhaps the enumerators were competent, perhaps not; perhaps competent, but unable to acquire, because of conditions, the needed information. Most of the Southern States showed a healthy increase. The census of 1880 very effectually settles the question of deficiency in 1870.

TEXAS.—This is the largest in area. In 1870 the population was 564,700, the children 89,108, ratio 15.7 per cent. In 1900, population 2,426,669, children 362,219, or 14.9 per cent, both rates far above the average.

Many notes of interest have been ascertained, but the recital of one more must suffice, and that is Kansas.

KANSAS.—In 1850 Kansas had no separate political existence. She belongs to division D, which in 1860 had the highest per cent-

age shown in the table of per cents. When she came into the Union in January, 1861, she carried her head high and pointed significantly to the fact that more than 17 per cent of her population was under the age of five years. She had been "bleeding," "drouthy," "freestate," "proslavery," "border-ruffian," "John Brown," "rebellious" Kansas. Better to be known even ignominiously than not at all. The commonwealth was jubilant in 1870, when the children were still more than 16 per cent; happy in 1880, for they exceeded 15 per cent. But alas, poor Yorick, pride goes before a fall.

> The boy stood on the burning deck
> Whence all but him had fled.

Things happened to the boy, and so they did to Kansas. Ask the manes of a former United States senator, or the vanished hopes of scores of anticipating officeholders; ask the Interior Department why Oklahoma was opened for settlement and for homesteaders about that particular time; and inquire why the children had dropped from 145,484, in 1880, to 84,840, in 1890, and in that year that her little ones were only 6 per cent of her population—not more than lawful interest. But Kansas is equal to all emergencies. Smiled she ever so sweetly in 1900, and raised that little 6 to 11.786 per cent.

B. S. McFARLAND.

PLANT BREEDING WORK IN THE BOTANICAL DEPARTMENT, 1903.

CORN.—Despite the unfavorable character of the weather during much of the present growing season, considerable work of value has been accomplished. In corn breeding, the endeavor to increase the protein content of the corn kernel has been continued. Twenty lots of corn, which have on analysis shown the highest protein content for the past four years, were planted and close pollinated to secure corn for further analysis. It must be remembered that the fact that the protein content of corn can be materially changed by selection is not considered at this Station as having been proved as yet beyond a demonstrable doubt. In addition, another experiment was instituted with Reid's Yellow Dent, a variety of corn which is claimed by its originator to have been maintained as a pure-bred strain since 1847. A bushel of this corn was obtained from Mr. Reid himself, and each of the eighty-three ears that made the bushel was planted in a row by itself, after three rows of kernels, running lengthwise of the cob,

had been removed for chemical analysis as to protein content. These ears were planted in the order of those having the greatest number of rows on the cob from the south to the north of a completely isolated field. It was thought that in this way the pollen drift would be from the many-rowed to the few-rowed plants. Analysis of these parent ears shows that but nine have 2 per cent of nitrogen, which must be multiplied by 6.25 to estimate the protein content. Of the corn grown by the Botanical Department for the past three years, for increase of protein, there are 79 numbers which have shown an average nitrogen percentage of 2 or over, and 12 of these have from 2.4 per cent to 2.49 per cent of nitrogen. It would seem from the results thus far that successful results in this direction are possible of attainment. The object of taking up Reid's Yellow Dent for protein breeding purposes was to secure an uncrossed variety, all of those in hand thus far having originated from crosses. The crucial test of the protein breeding at this Station will come this winter, when the samples of Breeding No. 138 are analyzed. This number shows an average content of 2.42 per cent nitrogen for three years, *in the ears analyzed.* The fact that these ears have been few in number in all the high protein lots is due to the fact of their having originated necessarily through hand pollination to prevent out-crossing, and subjects the results to the criticism that the analyzed samples are too few to represent a fair average. This criticism will be met this year by the analysis of a considerable number of samples of No. 138, obtained by planting an isolated block of this lot and allowing it to be freely wind pollinated. In this way a larger quantity of ears has been obtained.

The question of the behavior of hybrids is of the utmost practical as well as theoretical interest. Information to this end has been sought and to some extent furnished by the experiments of Mendel and others, but vastly more experimentation is called for in order to determine, by exact statistical methods, the distribution of characters in the hybrid offspring in the generations immediately succeeding the cross. A very large number of crosses to this end have been made this year, among very distinct varieties of corn.

Crosses have been made between varieties of dwarf and of tall habit, between flint and dent corn, between dent varieties of different color, and between sugar corn of several sorts and a num-

ber of sorts of flint and dent corn. Popcorn and podded corn have also been utilized in various crosses. The seed resulting from all these crosses will be grown, the plants self-pollinated, and the behavior of the progeny recorded, with respect to the distinctive parental characters.

Among the six genera of the corn tribe of grasses, two, Teosinte and Gama Grass, are of forage value. The former is a prominent forage plant among the Mexicans, but as it will not ripen seed in this region, it is not desirable here. Gama Grass, which is native to the plains, is a tall leafy plant found growing in fair abundance in the moister swales of prairie meadows hereabout. Inasmuch as Teosinte has been successfully crossed on corn, it was thought reasonable to attempt crosses between corn and Gama Grass with a view to obtaining a possible hybrid combining the perennial nature of the latter with the more leafy and succulent habit of the former. None of the crosses with corn as the female parent were successful, but a number of seeds have been obtained from the reciprocal cross. The behavior of these hybrids will be watched with especial interest. This is the first time this cross has been effected within the writer's knowledge.

WHEAT.—One hundred forty-four new "varieties," so called, from all parts of the world, were planted in preliminary trial plots. Some of these give unusual promise and will form a basis for future breeding. Mention might be made of the introduction of einkorn for the first time for trial at this Station. Although a plant of the wheat genus, the fact that it produces but one grain in a spikelet renders it useless for breeding purposes as a seed bearer, but its extremely leafy and "bunchy" habit, exceeding wheat in the amount of herbage it develops, offers encouragement for its introduction as a spring pasture plant, and it will be bred to that end. The wheat emmer hybrids obtained last year grew well and have been planted this year to increase progeny. The object of this cross was to obtain, if possible, a hardier bread wheat for the semi-arid west. This spring, a number of successful crosses of rye on wheat were effected. Some of these show the phenomenon of "xenia" or, as it is sometimes incorrectly called, "double fertilization." In xenia, one of the male fertilizing cells or sperms fuses with the nucleus of the endosperm in the embryo sac of the female plant, with the result that in the development of

the seed both the paternal and the maternal characters are seen to develop in the outcome of the immediate cross. This is a common occurrence in corn, where we find it "crossed in the ear," as the saying is, as when kernels of sugar corn are found growing on an ear of field corn. In the case of xenia in the wheat-rye hybrids, many of the seeds of the wheat obtained by pollination with rye show the distinctively blue color of the rye grain. This seems to be the first recorded instance of the phenomenon in wheat-rye hybrids, although doubtless other hybridizers have observed it before. The objects sought in these hybrids is a purely scientific one—the application of the law of Mendel to the case in hand. Of course a practically useful hybrid of this cross may conceivably turn up. The wheat crosses of past years have been weeded down to a few of the most desirable, which will be increased as fast as possible for comparative yield tests.

Soy Beans.—Last year the breeding of the soy-bean as a grain plant was commenced. Two thousand plants were selected in the field, harvested, and the yield in pods and number of seeds of each was recorded. The plants were then classified according to the number of pods borne per plant. This year the seeds of each plant in the highest and lowest decades, those bearing from 40 pods up to 110, and those bearing 20 pods down to 1, were planted separately for comparative results, and we are now engaged in tabulating the pod production of each of the individuals of the decades planted. From this experiment it is hoped to demonstrate positively or negatively the value of selection as a means of plant improvement. Incidentally we are getting other interesting things out of the soy-beans. Among the progeny from one parent we sometimes find extraordinary sports arising; growing, in some cases, twice as tall as any of the others of the family, etc. These have been selected for further planting and observation. It should be stated that in all cases the "sports" of unusually vigorous type are plants inside the rows, and have had no better advantages in the way of space for root or leaf development than their more humble fellows. Some turns toward marked earliness are seen in the progeny of certain mother plants. This seems to be coupled, in the cases under observation, with the non-shattering habit, which is of prime importance to the soy-bean as a grain crop. So that in but the second season with soy-beans we have found earlier plants, non-shattering

plants, and more vigorous plants, as the result of one season's careful selection of mother plants in the field.

OTHER PLANTS.—Forty-three varieties of rye were grown in the breeding plots during the past season, and a large number of these have been replanted this year for a more extended trial. Sixty-nine varieties of oats, one hundred thirty-eight of barley and over twenty of spelt will be planted in breeding plots in the spring. Of the spelts a small quantity of each has been planted this fall to secure a winter hardy variety, if possible. Nursery plots of wheat are maintained as usual, for selection of superior mother plants.

H. F. ROBERTS.

MANUAL TRAINING IN THE HIGH SCHOOL.

SOME one has said, "The first necessity of man is to live; his first duty to work." At no time in history has the problem of working and living been brought so forcibly before the public mind as at the present. It is quite true that no one can ave a complete education without some work in manual training, and that it should therefore form some part in the education of every child; and in order that this may be accomplished it must be placed in the regular course of instruction in all the graded schools. Since fourteen years is the average age in which children in the country must quit school, and the greater portion of which do not get farther than the primary grades, if then, any of the benefits are to be obtained by this class of pupils it is necessary that this instruction be given early in the course and that the appliances necessary for its introduction be very simple; then have its relation to the regular school exercises be so thoroughly understood that all may be able to see the connection; for if its important relation to the common branches can be shown its success will be much more certain.

In order that manual training may be introduced into our public schools, which in time will be a part of the curriculum in each school, since enlightened sentiment demands it, it will have to be introduced largely in the school rooms as they are arranged at present, with the addition of the necessary equipments for carrying on the work in connection with the studies as they now exist, and by the teachers now employed.

It must be understood that the one great aim in manual training is not merely to develop the skilled hand, "but the better,

through this means, to insure the cultured brain." It is necessary that the head and hand be trained together, so there will be an equal growth on all sides. In training the hand so that it can perform promptly and with ease that which is definitely required obtains the same result as training the brain. Then, to neglect to train the pupil's hand is to bar one of the most important avenues to his mind. If we would train students to think and act wisely we must seek those means, by which they will be developed so they can put out their best strength intelligently and in the way best suited for any emergency.

The time is now past when it is necessary to prove that art education and manual training are necessary and profitable in the public schools, for all those worthy to be called teachers are of one opinion on the subject. The greatest problem which now confronts us is, What kind of training is best? Mr. Chamberlain, a director of manual training, gives the following definition: "Manual training includes everything in the course of study in which the hand does a part." In connection with this may be mentioned clay modeling, stick laying, and paper folding. This work, of course, would be confined chiefly to the primary grades. Free-hand drawing will be outlined for work in all grades, while cooking, sewing and bench work would be included in the upper grades; and cooking, freehand and mechanical drawing, moulding, forging and machine work in wood and metal, and work in botanical, physical and chemical laboratories in the high school. Since 1890 the sewing department has grown to include cutting and fitting, this work being done by girls of the sixth grade. Plain sewing is taught to the girls of the third, fourth and fifth grades only, and in the rooms used for other school purposes.

In the school at Washington it has been the aim to have some form of manual training, suitable for every pupil in all grades from the kindergarten to the high school.

Wherever manual training has been properly introduced and conducted the results have been entirely satisfactory. Even more benefits have been derived than was anticipated. By this means great interest may be awakened in the minds of the learners, because they are brought in contact with that which is of a real personal interest. The student is made to realize that his labors in the school room along an educational line have a close relation to the daily life which awaits him.

While it is true all progressive educators agree that hand training is not only a necessary element in education, but that it promises to be one of the greatest factors in the solution of the great social and economic problems of the day, it must still be admitted that the general public has not yet grasped the idea in its fullest extent, and a great many of our administrators of educational affairs still look upon this training in the school as something of a fad and entertain grave doubts as to the advisability of expending public money for the equipment of shops for teaching carpentry and kitchens for instruction in domestic science.

There has indeed been a great awakening since the introduction of the kindergarten in this country, and although manual training has forced its way into many of the public schools in the larger cities and its advantages are becoming more and more appreciated, yet the conquest will not be complete until the whole territory is occupied.

MAUDE COE.

The following resolutions were passed by the unanimous vote of two hundred farmers, at the Wakefield farmers' institute, October 9, 1903: The Agricultural College and Experiment Station are separate institutions, so far as the money used in running them is concerned. At present the only funds actually available for the use of the Station is the United States Government appropriation, which amounts to $15,000 a year. This amount is divided between eight different departments and pays part of the salary of the professors as well as the expenses of conducting experiments, etc. The experiments conducted by the Station are of great value to the farmers and the work should receive their hearty support. The annual appropriation by the United States government is not sufficient to carry on the work. Other states are assisting their experiment stations by special appropriations; therefore be it *Resolved*, That we, of the Wakefield Farmers' Institute, are in favor of encouraging the work of our Experiment Station, and do hereby recommend to the members of our next legislature that special appropriations be made for Experiment Station work.

An examination for teachers' certificates will be held at the county superintendent's office, at Manhattan, commencing at 8 A. M. Saturday, October 31.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

One hundred forty young women are taking hygiene in Mrs. Calvin's classes.

Students J. H. Whipple and Dan Walters were laid up for several days on account of sprained ankles.

The Domestic Art Department has lately increased its inventory with three new Singer machines.

Professor Ten Eyck, Mr. Wheeler and Miss Minis attended a farmers' institute at Wakefield October 9.

The Y. M. C. A. has graded and fitted up a basket-ball ground in the city park, near the Dewey dormitories.

Miss Ella Weeks was on the sick list last Thursday and her classes in freehand drawing enjoyed (?) a vacation.

President Nichols was in Topeka last Wednesday and Thursday attending a meeting of the State board of education.

Doctor Mayo was called to Olathe, Leavenworth and Anthony during the past week to investigate reported cases of glanders.

Student George Gasser, of the engineering course, accidentally cut the end of his thumb off while at work in the carpenter-shop last Tuesday.

The milk rooms in the dairy barns were being ceiled with ceiling boards last week, in order to keep them warm when cold weather sets in.

The Agricultural Department is having the attic of Agricultural Hall floored and changed into a seed room for storing and examining the seeds of the Experiment Station.

The second-year short-course classes have been doing work in canning, preserving and making jellies and pickles, and as a result the Department of Domestic Science has many dozens of delicious fruits and preserves.

Mr. J. A. Conover, '98, has been awarded the fellowship in animal husbandry at the Iowa Agricultural College. This fellowship was contributed by Clay, Robinson & Co., and amounts to $300. This will enable Mr. Conover to continue his studies in animal husbandry. Mr. Conover also took the third prize in the corn-judging contest.

To-day the Domestic Science Department moves its short-course laboratory into the new rooms in the basement of Kedzie Hall. The laundry work will also begin this week.

A regiment of infantry and one troop of cavalry enroute from Leavenworth to Fort Riley to participate in the maneuvers, camped near the College from Sunday afternoon till Wednesday morning.

The rains of last week have greatly retarded the building operations of the contractors of the two new College buildings. Practically no work could be done before Friday morning, and the roads were so bottomless on that day that all heavy teaming was out of question for the remainder of the week. Friday and Saturday were ideal Kansas fall days.

The machine-shop is constructing fifty new drawing tables for the classes in mechanical drawing. The tables have iron supports and are arranged so that they can be raised or lowered at will by a very simple movement. Those who have seen it pronounce it a neater and better table than any now in the market and advertised in the catalogues of the large drawing supply houses.

Lieut. P. M. Shaffer, detailed by the U. S. War Department as professor of military science and tactics at the Kansas State Agricultural College, arrived last Thursday and took charge of the cadet battalion on Friday morning. The lieutenant is a college man and a straight and soldierly-looking officer. The students like him and the prospects for profitable and high-grade work in his department are first-class.

There are times when we have no use for the Ampelopsis vines that climb up and along the white stone walls of many of our College buildings and drape them so picturesquely—they harbor the nasty box-elder bugs by the peck or bushel and require constant care and trimming—but just now, in October, they are a thing of beauty and a joy. They have changed their glossy green leaves into crimson hues of all possible grades and shades and the blue seed grapes have appeared so profusely this season that we are ready to vote in favor of planting a few more next spring. No roses without thorns, and some thorns on many roses.

Homer A. Smith, a member of the senior class from Logan, Phillips county, died last Wednesday morning at 6:30 of typhoid fever. He had been sick but a short time and had evidently brought the germs of the fatal disease with him from home, as his mother, who remained there, is very low with the fever. The funeral services were held on Friday afternoon in the First Methodist church of Manhattan and his remains were buried in the Manhattan cemetery. His class, many students and members of the Faculty showed their esteem for his exemplary life by attending the last sad rites. Smith was a good student and a young man of sound character.

ALUMNI AND FORMER STUDENTS.

W. H. Edelblute, '92, county surveyor, asks to have the address of his INDUSTRIALIST changed from Harrison, to Rathdrum, Idaho.

Through the courtesy of E. C. Trembly, '95, Comiskey, Kan., we have just been informed that there is still another pair of twins in the alumni family, of which Mrs. Clare Wilson-Dutton, '97, is the mother. Mr. Trembly says, "The youngsters are equally divided as to sex, and arrived about grass time, some time in April, I think."

Howard M. Chandler, '03, writes to Professor Walters, from San Francisco, Cal., that he has found pleasant and remunerative employment with the Morton Machine Company, 134-142 Fremont street. He says that the machine-shops and electrical engineering plants of the golden state are booming and high-grade engineers are in demand.

Last Monday treasurer-elect J. C. Christensen ['94] took up his duties as treasurer of Riley county and V. E. Johnson, who has most admirably served in that capacity for the past four years, retired. Mr. Christensen is a young man of ability and is thoroughly acquainted with the routine work of the office from his long service as Mr. Johnson's deputy. A more competent man would be hard to find.—*Mercury.*

B. Buchli, '84, who has lately moved to his farm located ten miles southwest of Alma, writes to the Veterinary Department for blackleg vaccine for his herd. Mr. Buchli has been a county officer of Wabaunsee county for many years and could have continued in his position by simply permitting his friends to nominate him again, but he preferred to go to farming. His ranch contains nearly three thousand acres of fine, well watered upland.

Many friends greeted Capt. William A. Cavenaugh, who was with the troops encamped here Sunday afternoon and Monday. Will graduated in the College in '96 and shortly afterwards entered the service of Uncle Sam as a private. His merits have been recognized and in the short space of six years he has won his two bars. He has changed in appearance and many old friends scarcely recognized in the soldier weighing over two hundred pounds, the slender college youth of other days.—*Nationalist.*

A copy of the *Manila Cablenews* for August 19 contains the announcement that "The secretary of war has confirmed Governor Taft's choice of Capt. J. G. Harbord ['86] for appointment as assistant chief of the Philippine Constabulary, with station in the Moro province." He will be stationed at Zanboanga. It is stated that his position is one beset with much responsibility and that he will be an important factor in the work of establishing Civil government in the Moro province. This appointment was noticed in these pages at the time it was made, but it is interesting to see how it is looked upon on the other side.

Historical Society

VOL. 30 NO. 6

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K. S. A. C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I. T. U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K. S. A. C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K. S. A. C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K. S. A. C.) ..... Director of Physical Training

MISS LORENA E. CLEMONS, B.S. (K. S. A. C.) ..... Secretary

JACOB LUND, M.S. (K. S. A. C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K. S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K. S. A. C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K. S. A. C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K. S. A. C.) ..... Assistant in Music
William Anderson, B.S. (K. S. A. C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Ernest C. Gasser ..... Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K. S. A. C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K. S. A. C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N. H. C. A. & M. A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K. S. A. C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo. C. Wheeler, B.S. (K. S. A. C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K. S. A. C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K. S. A. C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K. S. A. C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K. S. A. C.) ..... Bookkeeper
Miss Matilda Doll ..... Clerk in Post-office
Miss Mamie Alexander, B.S. (K. S. A. C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K. S. A. C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., OCTOBER 27, 1903. NO. 6

THE NEED OF EDUCATION IN AGRICULTURE.

SOME one has said that there is an unwritten sign over every door, "Brain wanted here." Our civilization calls for more trained, developed and educated minds. It seems that this motto stands out most vividly from the portals of agriculture. Since the creation of earth, mankind has depended upon its produce for sustenance. Agriculture was the intuitive impulse of the first inhabitant of whom we have history. It was the basis and still is the keystone of modern civilization. It is the foundation upon which rests the commercial status of our nation, and upon its development hinges the prosperity of our country. The man behind the plow is the bearer of this mighty responsibility, for it is he who wrests from the soil those things which form the basis of food for the nation and the fiber for their clothing. He must watch the markets, winds, clouds, and signs of the times; he must be a chemist, and in a way a mechanic, and an observer of nature in all her wondrous beauty. He must study the soil conditions and the tools with which to work the soil; for he knows an error here means the loss of a crop. He must be an animal physiologist, and know how to feed and breed animals; in short, he must be acquainted with all of the natural sciences that govern his crops and his flocks, and last, but not least, he must be an all-round business man. More brain is needed here; more education is wanted to develop this industry and turn it into a more successful and remunerative field. Reynolds, the celebrated artist, was once asked how he mixed his paints to produce such beautiful colors. He replied, "Mix them with brain." Mix farming with brain and it will pay.

It is true that farming is hard work, but scientific education and American ingenuity have done much to contrive various methods by which plowing, cultivating, hoeing and reaping can be made easier by the use of farm machinery, the horse, and mechanical power. The hardship of farm life is not half what

it used to be in the days of our grandfathers, and it can and must be made easier still by proper education and the application of scientific methods to secure greater results and more profits for the labor involved.

"To earn more you must learn more," is an old proverb that applies in agriculture as it does in any other vocation in life. It is the educated man who understands the principles with which he is dealing and who can vary his methods according to his conditions; it is he who can intelligently correct his errors and improve the circumstances which surround him in modern agriculture. Strong competition and strife have brought about these present circumstances, and in order to work to advantage and make agriculture a business that is more remunerative, he must understand the reasons for doing things. He must know how to calculate, how to prevent the little leaks which occur, and how to determine the difference between profitable and unprofitable business. The time has gone by when farming can be carried on automatically, and old methods must be superseded by new ones which are in harmony with the progressive spirit of the times.

There are many ways of securing this education, but few are really practical. One is from experience; but experience is a dear school. We cannot afford to spend years of time and large sums of money to discover methods that have already been discovered at great expenditure of money and labor. Self-education is a hazardous method as well as a difficult one and is not to be recommended to those who can do better, as most men can in these days of free educational institutions. Only the best men can do this with reasonable success. There are many failures among those who try, and some of those who have failed in their attempt at self-education are like insane men, ignorant of their actual malady. By far the best and safest method for a young man at the present time is to attend some good agricultural college, where he may become acquainted with the sciences and with the agricultural experience of others in the past; and afterward, when he is in business for himself, he will have abundant opportunity to use his full stock of patience in self-training. Even after a full course of study in agriculture he will have enough left to learn, in fact all that he can afford to learn, from the school of experience. The self-binder is a machine which handles the harvest at a cost of

eighty per cent less than when done with a sickle. This machine has been gradually developed, through its various stages, from the sickle to the scythe, cradle and reaper until now it accomplishes nearly all operations that once required hard human labor in harvesting the grain. It represents the compilation of thoughts from many inventive geniuses, the work of master minds; and it required a tremendous capital to bring it to its present state of perfection. Men are trained and educated to operate these machines. Can any man in these days of enlightenment begin with the sickle and solve his own problems in agriculture to a degree of perfection that the binder represents? No, this cannot be properly accomplished. But we have an analogous case in attempting to farm in modern times without proper training or education. Does it not seem logical, then, to learn from the books the history of the sickle, scythe, cradle and reaper, and devote our time and efforts in studying the operation of the binder and modern problems that confront us in agriculture? Is it not far better to train and educate ourselves to-day to be prepared to take active part in the work of the world, to become familiar with modern methods of construction, and skillful in the use of tools and machinery rather than to speculate over the tower of Babel or the pyramids of Egypt? To study the usefulness of modern problems, as to how to tunnel under the Alps, is better than to read the story of how Hannibal made the road over them. Education in agricultural colleges must be the process of securing rapidly the knowledge and experiences of the past, and preparing the young man to solve the new problems that are constantly coming up.

Education pays for the poor as well as the rich; indeed the poor man is the one that needs it most. There is seldom a time when a young man of good health is too poor to prepare himself for his life work. The old adage, "Where there is a will there is a way," applies here. T. B. Terry once said, "Only the rich can afford to raise weeds and burn green wood." Our colleges teach us that there are a good many things that a poor man cannot afford to do. He cannot afford to farm land that produces only half a crop, especially if he has to give half of what is raised to the owner of the land; he cannot afford to shelter his stock on the leeward side of a barb wire fence, keeping them warm with thirty-five cent corn and then find them lighter in the spring than they were the pre-

vious fall, when with warm sheds he could have kept them thriving with half the feed; he cannot allow his cows to use their butter-fat to warm the air in open yards or breezy stables, or feed them for one hundred fifty pounds of butter-fat or less per year, when with better cows and the same feed and care he would receive three hundred pounds; neither can he afford to raise scrub cattle either for the dairy or for beef when it is just as easy to raise a prime beef that will always be in demand at top prices and bring a profit to the feeder. Surely there is no better investment for the poor young man's daily earnings than education. If the modern farmer is to succeed he must be a student; he must understand that it requires a higher degree of skill to make six per cent on land worth one hundred dollars per acre than it does to make it on land at fifty dollars per acre; and as land is gradually increasing in value it is necessary that better farming must be done. Better farming involves better farmers, and better farmers necessarily means better men—individuals as well as farmers—a broader, higher type of man who will command and influence things not only in farm life, but in political and social life as well.

Agricultural education in these days should include something besides those things that will make farming simply profitable; it should include those subjects and points of view that will make the farmer a man and a good citizen, for after all we make money in order to live. Only the uneducated live to make money. Perhaps many of us are taught to lay too much stress on the business of making money. We should not protest against making money, for it is an evidence of what human labor has achieved. It is not evil to have an ambition to have money enough to live comfortably and to help others; but it is an evil, in every sense of the word, to hoard money or to utilize it in such a way as to turn one's thoughts wholly to the getting of more money. The necessary qualifications for success are not entirely in the making of money; in reality they are shown in the man by his technical skill or high degree of training. The successful man is he who labors earnestly for the good of mankind and succeeds in leaving the world a little better than it was before. True success comes only through hard and diligent work. From the beginning we have heard the admonition to men, "In the sweat of thy face thou shalt eat bread." This has been going down the cor-

ridors of time from generation to generation until to-day we find ourselves confronted with the same precept. Only from the labors that man has accomplished himself can he be truly successful, even though he was born with a silver spoon in his mouth. True education tends to character making rather than to money making, and it is the mighty power that raises the moral standard. An education is necessary to man's highest mission; it tends to develop the highest judgment and makes him more generous and patient; it leads him to greater decision of character and thoughtfulness for the comfort of others, and reveals to him the beauties of nature. The farmer's happiness is never awakened until education has opened his eyes and has pointed out to him the aesthetical side of agriculture. In nature we find just plain pleasures, but they are native to us. Emerson says, "Let culture raise the blind before your eyes, for the mind loves its home, it likes to feast on the rocks, the ground, the trees, and the blue zenith where romance and reality meet."

Ruskin says, "Get into nature and in all singleness of heart walk with her laboriously and trustingly, having no thought other than how best to penetrate her meaning. Rejecting nothing, selecting nothing, scorning nothing, when we stop to think that there is a body and a spirit in everything in this universe. A great many birds need not have sung, a great many flowers need not have bloomed, and the sun need not have shone so brightly; but the all-wise Creator has seen fit to lavish a great many favors upon us, that have added to the happiness of the world of persons who have an appreciative eye for these things." No sadder sight is ever present than to see men passing through the world without appreciation of the beauties of nature, for he passes through this world only partially equipped. Agriculture invites you to these beauties.

We say that every lawyer must have an education, must spend three or four years preparing for his practice to make him a successful man. We hope that this sentiment will become stable in preparing a farmer who must deal with the intricate problems of life.

My young friends, have you ever asked yourselves the question whether you are inclined to be a farmer? Have you noticed that there are greater opportunities at the present time than there ever has been in the history of agriculture for a successful

life for a young man made of the right stuff? Take advantage of these opportunities, but first develop the latent powers within you by taking a course in agriculture in some agricultural college.

The Kansas State Agricultural College has an open door for every boy who has a liking for such training, and bids fair hope to every one who comes here to take advantage of it. It offers opportunities for the Kansas boy, greater than those offered by any other college, and like the people of the great commonwealth of Kansas, it is progressing steadily, keeping pace with advancing times, and giving each student the opportunity to develop himself to the highest degree. O. ERF.

THE COCOONING HABITS OF SPIDERS.

AMONG all the creeping things none deserve less the popular odium and the ill reputation that attaches to them than the spiders. Superstition ascribes to them artful ways and dark designs, literature associates them with gloomy dungeons and venomous reptiles, while common ignorance invests them with various and sundry undesirable qualities. This is surely hard luck. The outcome of it is that the average newspaper correspondent lays at their door the death of every citizen whom a mysterious providence afflicts with septicemia—resulting from scratches—and children are taught to shun or destroy these interesting little spinners who could teach them more in a minute than an ant could in a week. While all other creatures of the field and wood receive their share of attention at the hands of the student collector, never a spider graces the cyanide bottle of the fair sophomore as she returns with bug net atrail to display her trophies to her room-mate. This is good luck—for the spider. But the fact remains that the girl is not interested in spiders. She has seen her little brother drown out the horrid things from their burrows, and has herself, perhaps, assisted her mother, when, at each recurring spring season, with well-directed thrusts of the broom, they dislodged the cobwebs and their tenants from the corners of the parlor.

However, all this prelude availeth me not, except, like the first chapter of a patent-medicine advertisement, to divert suspicion from my real purpose, which is to discuss the cocooning habits of spiders.

After all, it is true that spiders will have to plead guilty to a

natural ferocity that condemns each one to a solitary existence and even adds the risk of life to the addresses of courtship, but only a lack of knowledge concerning their habits can account for the low esteem in which they are generally held. Familiarity with their works and ways tends to raise these humble spinners many notches in the scale of our estimation. Certainly no class of insects, that nearly related group comprising more species than all the rest of the animal kingdom together, presents more interesting traits in a general way or shows more tenderness and solicitude in the care of its young than the *Araneida*. If it were the purpose of this article to defend the spider's reputation, much could be said that would tend to enhance our respect for them, but the limitations of the subject will permit discussion of their conduct along one line only.

Spiders interest themselves in various spinning operations; they make snares to trap their prey, silk-lined habitations to shield them from rough weather, drag lines to serve as bridges and ladders, balloons to bear them aloft in their autumnal flights, fetters to bind the larger insects they capture, and silken sacks in which to enclose their eggs. The use of silk for this latter purpose seems to be universal, although many species omit one or more of the other industries from their line of practice. The statement of Baron Walckenaer, a French writer, that the genus *Pholcus* furnishes exceptions to the general practice of surrounding the eggs with silk, is certainly erroneous as far as *P. phalangiodes* is concerned. The eggs of this long-legged cellar spider may not properly be said to be enclosed in a cocoon, but they are at least held together by silken threads. Many spiders use their silk for cocoon fabrication only.

The majority of spiders live but one year, and in their period of maturity each female makes but one cocoon to enclose her contribution to the perpetuation of the species. There are, however many exceptions to this general rule. Some spiders are known to live several years, probably rearing a brood each season, and a number of quite common species, as the labyrinth spider and the cobweb weaver of our houses and outbuildings, lay their eggs at intervals during the summer, adding a cocoon each time to the collection or string. If one will take the trouble to look in the angles of buildings or in cellars he may find, at this season, several little brown balloons hanging from the threads of the cobweb weaver's

snare; earlier in the summer there were only two or three, now, perhaps, six or eight.

In texture the egg sacks vary from a simple mass of loose floss, through which the eggs can plainly be seen, to a structure whose walls are like parchment, close woven and stiff enough to protect the contents from rain and frost through the long dreary months of a north country winter. The former class is represented by the cocoons of some of our common orb weavers, such as those that stretch their webs between the timbers of bridges; the latter class is typified by the egg sack of the golden garden spider, a familiar object in the late autumn.

The modifications of structure to adapt the cocoon to season or environmental conditions are very obvious. Cocoons which are made for summer use only, or are sheltered in some way or protected by extraneous material, are less compactly woven than those meant for wintering eggs or young, or those which occupy exposed situations. Again, the composition of the cocoon will depend to some extent on the care the mother spider is to give it after the eggs are enclosed. Some species die shortly after they lay their eggs, leaving the latter to the vicissitudes of fate. This is especially true of those that mature in the fall, as do the majority of the orb weavers. Other species, particularly of the jumping spiders, stand guard over their treasures until the young emerge, while still others carry the cocoon about with them, clasped in their pedipalps or attached to the spinnerets. The least observing among us have no doubt quite often seen instances of this latter habit, though not very recently, for most of the running spiders mature in the spring or early summer, and one may find them then with their cocoons in the grass or under stones. A little later the young emerge and climb upon the mother's back, where they cling for a week or so until they can shift for themselves.

The sites chosen for a fixed cocoon seem also to have some reference to the mother's future intent. Cocoons that are to be the objects of her watchful care are usually placed near the spot she has chosen as an abiding place—in the snare, if she makes one, in the burrow or dwelling tube, or in an incubation cell made expressly for the purpose. On the other hand, species that do not survive cocooning will go some distance to find a secluded spot under stones or bark or in a rolled leaf. The protection of

the cocoon in such cases, or occasionally even when guarded, involves the use of various extraneous coverings. Sometimes bits of dead leaves or sticks are employed; at other times fragments of captured insects, like trophies of victory, serve the double purpose of adorning and hiding the cocoon. Often fine earth or, still better, a mortar of clay completely hides the silken sack. Cocoons of this sort, as well as some others, are frequently suspended by a slender pedicel from a convenient support.

The parts of a cocoon seem to require separate mention. There are two types of outer envelope—one consisting of an entire, homogeneous piece, and one made up of two valves united at a more or less circular suture. This suture may be scarcely noticeable, or it may be a plainly marked line of weaker tissue that stretches to make room for the young brood, and finally ruptures to permit the egress of the spiderlings. The method of manufacturing such an egg sack is simple. A circular silken sheet of the proper size is woven, and upon this the eggs are laid. Another similar sheet is then spun over the eggs, and the two are united by their overlapping edges. The result is a biscuit shaped affair in some cases, in others a cocoon that is almost perfectly globular. These are the portable cocoons referred to above. Within the outer envelope of the homogeneous type of coccon may be one or more others, and on the inside, surrounding the eggs, is often a quantity of fluffy packing.

The contents of the cocoon next claim a share of our attention. Three conditions of the egg mass obtain among the various species of spiders: the eggs may be free to roll about like so many dry peas, they may be entangled and held together by fine threads of silk, or they may be glued together into a more or less compact ball by a viscid secretion that hardens as it dries. This last condition seems to be an especially favorable one in which to pass the winter. Evidence of this is supported by the egg masses of *Araneus trifolium* and the spectacled spider of the East, which are not only held together but covered with a limy looking secretion.

The number of eggs varies greatly, depending largely, no doubt, on the chances for hatching and survival of the brood. We, accordingly, find the number greater when the eggs must pass the winter unhatched, or when they are not guarded by the mother spider. That this is not always true, however, is shown

by the fact that some spiders, whose eggs pass the winter without hatching, lay but a few. The triangle spider, for instance, encloses less than a dozen eggs in her compact, scale-like cocoon; but the latter is rendered so secure by reason of its protective coloring, in addition to other things, that probably nearly all the eggs hatch in the spring. Certain spiders which carry their eggs about, or shut themselves up in a cell with them, lay not more than three to five. The other extreme is represented by species such as *Argiope aurantia*, whose cocoons, containing from one thousand to twelve hundred eggs, hang unprotected from the tops of dead goldenrods through the storms of winter.

The large burrowing wolf spider, which lives in our gardens, lays from five to six hundred eggs, enclosing them in a globular cocoon. For this treasure the mother will fight desperately, refusing to surrender or desert it even when her legs are torn from her body. Her devotion is born of instinct, however, and not of reason; since it is an easy matter for an observer to impose upon her lower order of intelligence by substituting a bogus cocoon of pith. This she will regard with the same marks of tenderness she bestows upon the silken sack freighted with the hopes of her posterity.

In color the eggs also show some variation among the species. The prevailing tints are whitish or yellowish, though shades of red and brown are not uncommon. Even violet tints are ascribed to the eggs of certain species.

With spiders, as with animals of higher and lower types, the operation of the laws of natural selection begins with the eggs. These become the food of other spiders, or of birds and predaceous insects. Thus their numbers are greatly reduced. Out of six hundred cocoons of *Argiope aurantia*, collected by Professor Wilder on one occasion, less than one hundred fifty were entire, the others being torn or pierced. Parasitic hymenoptera of several species also seek out the cocoons, puncture the walls and lay their eggs there, so that their larvæ when hatched may find a supply of food at hand. In the autumn months it is the exception, rather than the rule, to find, in some classes of cocoons, one that is not parasitized. The spider's revenge occasionally comes in the form of a secondary parasite that, in turn, treats the first invader as he had treated the original cocoon builder.

When the young spiders have hatched, their troubles have only

begun. In addition to the dangers that threaten the egg, others await them. For example, if we are to accept the doubtful conclusions of some observers, they have to be on the watch lest they fall a prey to the appetites of their larger and stronger brothers. Cannibalism within the cocoon is not, however, an established fact; more evidence than that already gathered is necessary to prove that it exists.

Field observation reveals the fact that spiders pass the winter in one of three states—in the egg, as already referred to, as newly hatched young in the cocoon, or as half-grown spiderlings and adults in various shelters. Ordinarily in the summer, eggs hatch in from fifteen to thirty days, the time varying with the species, but when they are laid in the autumn they may not hatch until the following April or May. Of course only those young which hatch in the warm season and emerge from the cocoon soon after can receive any care from the mother spider. That such broods are cared for with the greatest tenderness and solicitude is a matter of common observation among such families as the *Lycosidæ*, the *Dictynidæ*, and the *Attidæ*. In the first of these families the young remain with the mother for as much as two weeks, being carried about by her as they cluster on her back. The *Attids* seal themselves up in a silken sack with the eggs, and when the young hatch remain with them for a long time. The young *Dictynids* occupy the maternal snare for weeks, and without doubt are afforded some protection and material help. Further observation will most certainly establish the fact that spider mothers of many species capture and bring food to their young, as do birds to their nestlings. THEO. H. SCHEFFER.

A recent number of the *Anthony* (Harper county) *Republican* contains an illustrated article by its editor, W. E. Blackburn, giving the results of his experiments in grape culture. The article is an exceedingly clear and well-written statement of the very encouraging results obtained. Mr. Blackburn is one of the rare citizens who has not only the breadth of view to see what his locality requires, but makes it a personal matter to investigate the possibilities of development.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99]..... Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Mid-term examinations next Saturday, October 31.

The carpenter-shop is making a case for Professor Willard's new private office.

Mrs. W. A. McKeever and son Harold have gone for a week's visit to Enid and Stillwater, Okla.

Owing to the excursion to Fort Riley, the Ionian and Alpha Beta societies hid not hold sessions last Saturday.

Lieut. P. M. Shaffer is boarding at the Gillett Hotel and rooming at Doctor Colt's new residence, on Houston street.

Librarian Minis sent three hundred sixty-three volumes of magazines to the State bindery, on October 17, to be bound.

Engineer Lund has commenced the building of a brick arched heating tunnel between Agricultural Hall and the new Dairy Hall.

The president of the American Veterinary Medical Association has appointed Doctor Mayo a member of the committee on diseases.

The machine-shop is repairing the iron work of the old Kansas river bridge, which was washed out by the floods. One span of the old bridge will be put across McDowell creek.

Doctor Mayo was called to Kansas City, Kan., Monday to investigate reported cases of glanders, and on Friday was called to Burlington to testify regarding a violation of quarantine.

The last call for the incidental fee was issued from the Secretary's office this week. Fully three hundred students seem to have forgotten that particular paragraph of the session laws of the last legislature.

The following young ladies were delegates from the K. S. A. C. Young Women's Christian Association to the State convention at Baldwin: Misses Rigg, McNutt, McCrone, Smith, Jessie Sweet, Kernohan, and Edwards.

The football game between our team and the eleven of Bethany College, at Manhattan Athletic Park last Saturday afternoon, was not attended as well as usual on account of the Fort Riley maneuvers, where many of the students and citizens had gone. The game stood 18 to 0 in favor of Bethany.

The commissioned officers of the College battalion, piloted by Lieut. P. M. Shaffer, of the Faculty, went to Fort Riley on Friday to witness the great maneuvers. All College exercises of Saturday were closed at the end of the first hour to allow all who wished to do so to take the 10:55 train for the Fort.

Contractor John Winter will begin this week with the laying of the floor joists of the attic of the new Dairy Hall. Another week of good weather will see most of the stone-work completed and a part of the roof trusses and rafters in place. The weather has been ideal for building operations the past week.

The seniors of the agricultural course, accompanied by many juniors and sophomores, went to Kansas City last week to attend the American Royal Live Stock Show. Professor Kinzer secured complimentary tickets for his class. He was in charge of the class, which spent Monday, Tuesday and Wednesday in judging the animals at the show.

The Secretary's office has lately added to its equipment a Burrows adding machine of modern construction. The machine adds numbers up to 9,999,999 with great speed and unerring certainty, and can be used to record numbers and write tables of various kinds. It was purchased of the American Arithmeticial Company, of St. Louis, Mo., and cost $375.

The short course girls are receiving good training in table serving by practicing on the members of the Faculty who have to stay at College for afternoon work. A limited number of dinners are served every day in the dining-room of Kedzie Hall. To a certain writer in a recent issue of the Kansas City *Star* we will say that the "victims" pay for their "balanced ration."

Charles S. Davis, superintendent of printing, 1897–'99, is now pleasantly situated in the government printing-office, Washington. He is at present in charge of the lead, slug and metal furniture supplies of the third division and the Roman type and sort cabinets of the third and fourth divisions. He has embodied the results of his experience in a distribution scheme or chart which he believes will be a great improvement over the plan now in use.

ALUMNI AND FORMER STUDENTS.

C. D. Adams, '95, writes from 1302 Cherry street, Kansas City, Mo. He suffered much loss in the flood, but is getting started nicely again and will be glad to meet any of his former associates when they are in the city.

George Logan, '02, writes that he is very conveniently and comfortably located at 6025 Ellis Avenue, Chicago, Ill. Mr. Logan is attending the University of Chicago and finds that there, as here, the work occupies one's entire time.

R. G. Lawry, '03, wishes the INDUSTRIALIST to find him at his present address, 114 33d street, Chicago, Ill.

The address of Frank W. Dunn, '84, is now Topolobampo, Sinaloa, Mex. He thinks that is destined to be a great city, and he will stay there and grow up with it.

C. C. Smith ['94] and family expect to move to Topeka next Monday, where C. C. will engage in the real estate business. We are very sorry to lose these good people from our town, and wish them success. This is their eighth move in four years. Are you not sorry for them?—*Nationalist.*

Will L. Hall ['98] returned Sunday to his home in Washington, D. C., from a trip to the Sandwich Islands. His work was in the interest of the Bureau of Forestry. Mr. Hall was offered a position with a salary of $3000 in the Islands, which he refused, as he prefers to work for Uncle Sam.—*Nationalist.*

Word has been received here of the death of Dr. L. Z. Coman, of Boulder, Colo., which occurred Friday, October 16. He had been ill ten days with pneumonia. For several years Doctor Coman had practiced medicine in Colorado and was a very skillful physician. December 27, 1894, he was married to Miss Rowena Whaley [third-year student, 1880], of this city, who survives him and who has the sincere sympathy of her many friends in this great bereavement.—*Nationalist.*

Elizabeth J. Agnew, '00, writes of her pleasure in studying at Teachers' College, New York City. She is in the senior class in the domestic science course, and Helena Pincomb, '01, Kate Zimmerman, '00, and Josephine Berry, formerly librarian here, are also members of the class. It is pleasant to know that, notwithstanding the advantages of the East and eastern institutions, Miss Agnew is still as heartily pleased with the College and its work in our State as ever, and also with our College people, both instructors and students. She also mentions a pleasant visit with Frank Shelton, '99, who was in the city for a week. Miss Agnew is located at 528 West 123d street.

While attending an institute at Winchester, Jefferson county, Miss Minis and Professor Dickens were entertained by M. W. McCrea, '93, who is one of the teachers in the Winchester schools, and W. H. Steuart, '95, a prosperous farmer of the county. Professor Dickens had the pleasure of meeting others of our graduates and former students on the Girard institute trip. R. E. Z. Long, sophomore in 1903, was returning to his home at Neodesha, having marketed three loads of fat cattle in Kansas City. John Loomis, junior in 1902, spoke in the institute on "Alfalfa Growing in Crawford County." He had made it a success. On the return trip, at the home of Dora Thompson-Winter, '95, he met J. N. Bridgman, '91, and his bride, Grace Stokes-Bridgman, junior in 1896–'97, and C. V. Holsinger and Olive Wilson-Holsinger, both of the class of '95.

Historical Society

VOL. 30 NO. 7

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K. S. A. C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K. S. A. C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K. S. A. C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K. S. A. C.) ..... Director of Physical Training

MISS LORENA E. CLEMONS, B.S. (K. S. A. C.) ..... Secretary

JACOB LUND, M.S. (K. S. A. C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K. S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K. S. A. C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K. S. A. C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K. S. A. C.) ..... Assistant in Music
William Anderson, B.S. (K. S. A. C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Ernest C. Gasser ..... Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K. S. A. C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K. S. A. C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N. H. C. A. & M. A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K. S. A. C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K. S. A. C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K. S. A. C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K. S. A. C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K. S. A. C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K. S. A. C.) ..... Bookkeeper
Miss Matilda Doll ..... Clerk in Post-office
Miss Mamie Alexander, B.S. (K. S. A. C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K. S. A. C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., NOVEMBER 3, 1903. NO. 7

SOME MATHEMATICAL CURIOSITIES.

MOST students of mathematics, in seeking the solution of a problem, give too little thought to the field in which the problem lies. The natural assumption is made, that the ordinary laws and processes and the familiar theorems which hold for examples of an apparently similar character are still valid. A sharper insight into fundamental hypotheses becomes at times necessary. It is true that the laws of mathematics wear the aspect of universality, but the operator who does not have an exact knowledge of the region of their application is liable to confusion. These remarks will apply to certain operations in some of the fallacies in the following collection. Any of the readers of the INDUSTRIALIST who may be mathematically inclined will find that a detection of the errors will bring them into a keener appreciation of the exact truth in a few particulars.

First Fallacy.—One of the oldest and most familiar deceptions is as follows: Suppose that $a = b$, then

$$\begin{gathered} ab = a^2 \\ \therefore ab - b^2 = a^2 - b^2 \\ \therefore b(a-b) = (a+b)(a-b) \\ \therefore b = a + b \\ \therefore b = 2b \\ \therefore 1 = 2 \end{gathered}$$

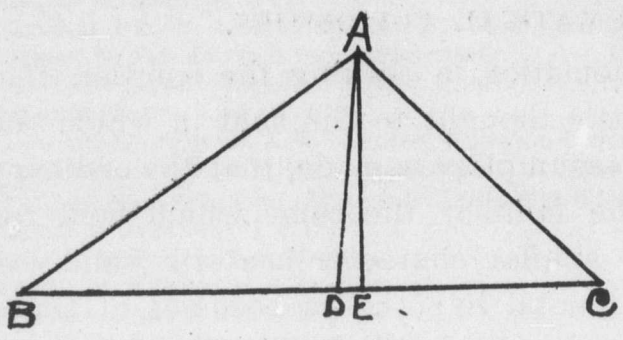
Second Fallacy.—Another example in the use of algebraic equations appears in the following: Let a and b be two unequal numbers, and let c be their arithmetic mean, hence

$$\begin{gathered} a + b = 2c \\ \therefore (a+b)(a-b) = 2c(a-b) \\ \therefore a^2 - 2ac = b^2 - 2bc \\ \therefore a^2 - 2ac + c^2 = b^2 - 2bc + c^2 \\ \therefore (a-c)^2 = (b-c)^2 \\ \therefore a - c = b - c \\ \therefore a = b \end{gathered}$$

Third Fallacy.—Another instance, the idea of which is due to the Swiss mathematician, John Bernoulli, is presented thus:

$$\text{We have } (-1)^2 = 1$$
$$\text{Take logarithms, } \therefore 2\log(-1) = \log 1 = 0$$
$$\therefore \log(-1) = 0$$
$$\therefore -1 = e^0$$
$$\therefore -1 = 1$$

Fourth Fallacy.—To prove that a part of a line is equal to the whole line. Let ABC be a triangle, scalene, for instance, in order to fix the ideas; suppose also that the angle B is acute, and that the angle A is greater than the angle C. From A draw AD, making the angle BAD equal to the angle C, and cutting BC in D.



From A draw AE perpendicular to BC.

The triangles ABC, ABD, are equiangular; hence we have

$$\triangle ABC : \triangle ABD = AC^2 : AD^2.$$

But since the triangles are of equal altitude it also follows that

$$\triangle ABC : \triangle ABD = BC : BD$$
$$\therefore AC^2 : AD^2 = BC : BD$$
$$\therefore \frac{AC^2}{BC} = \frac{AD^2}{BD}.$$

Hence, by a well-known theorem, we obtain the relation:

$$\frac{AB^2 + BC^2 - 2BC \cdot BE}{BC} = \frac{AB^2 + BD^2 - 2BD \cdot BE}{BD}$$
$$\therefore \frac{AB^2}{BC} + BC - 2BE = \frac{AB^2}{BD} + BD - 2BE$$
$$\therefore \frac{AB^2}{BC} - BD = \frac{AB^2}{BD} - BC$$
$$\therefore \frac{AB^2 - BC \cdot BD}{BC} = \frac{AB^2 - BC \cdot BD}{BD}$$
$$\therefore BC = BD,$$

a result which is impossible.

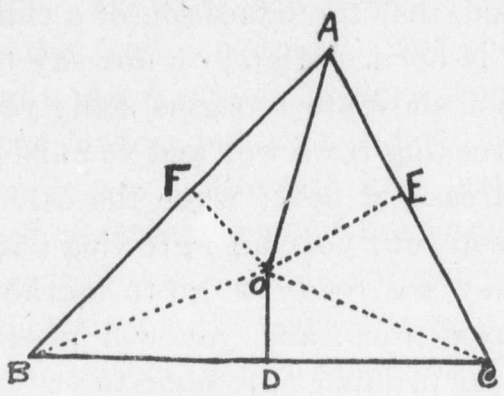
Fifth Fallacy.—To prove that every triangle is isosceles. Let ABC be any triangle. Bisect BC in D, and through D draw DO perpendicular to BC. Bisect the angle BAC by AO.

First: If DO and AO do not meet, then they are parallel. Therefore AO is at right angles to BC. Therefore AB = AC.

Second: If DO and AO meet, let them meet in O. First take the case where they meet inside the triangle. Draw OE perpendicular to AC. Draw OF perpendicular to AB. Join OB, OC.

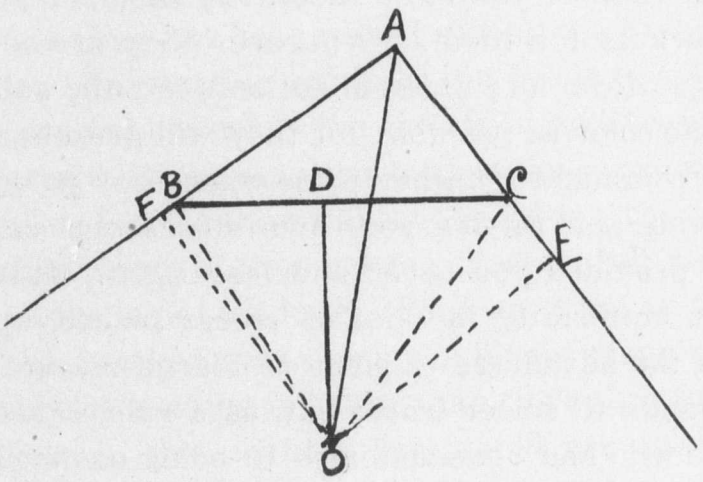
The triangles AOF and AOE are equal, since the side AO is common, angle OAF = angle OAE, and angle OFA = angle OEA. Hence AF = AE.

Next, the triangles BOF and COE are equal. For, since OD bisects BC at right angles, we have OB = OC; also, since the triangles AOF and AOE are equal, we have OF = OE; lastly, the angles at F and E are right angles. Therefore, the triangles BOF and COE are equal. Hence FB = EC. Therefore AF + FB = AE + EC, or AB = AC.



Third: Next take the case where DO and AO meet outside the triangle. Draw OE perpendicular to AC produced. Draw OF perpendicular to AB produced. Join OB, OC.

Following the same argument as before, from the equality of the triangles AOF and AOE, we obtain AF = AE; and, from the equality of the triangles BOF and COE, we obtain FB = EC. Therefore AF — FB = AE — EC, or AB = AC.



Thus in all cases, whether or not DO and AO meet, and whether they meet inside or outside the triangle, we have AB = AC; and therefore every triangle is isosceles, a result which is impossible.

B. L. REMICK.

The flooring of the attic of Agricultural Hall, for the purpose of changing the useless space into a room for storing seeds and plant specimens, is progressing. When completed it will give the Farm Department additional floor space to the amount of nearly three thousand square feet. It is the intention to make the room mouse proof.

CATTLE FEEDING.

THE problem that is of the most vital importance to the cattle feeder of the middle West to-day is how to produce beef most economically. Much has already been said on this subject, but we have a good deal yet to learn. Oliver Wendell Holmes once said, that the education of a child begins a hundred years before it is born. Might we not say that the making of a grand champion show steer begins many years before he is born. Feed your breeding cows well and you are making a start of producing a fine carcass of beef; when the calves are born, keep them growing; keep your yearlings growing; and keep your steers growing until they are ready to go to market. Do not fatten your steers—grow them, and you will produce a finer carcass and increase your profits at the same time.

To feed cattle to-day and be successful requires more than mere muscular exertion. The questions, when to feed and what to feed, are fully as important as how to feed, and unless all these questions are rightly settled you will not be bothered with the profits. How to obtain your feeders is one of the most important questions to be settled, whether you raise them, buy them, or go to one of the large markets for them. Wherever they are secured they should be a uniform lot; uniform not only in build and make-up, but as near one color as possible, for they will present a better appearance and command a higher price when they go on the market. By breeding and raising your own steers you can produce the best beef, provided you breed and feed right. It is hard, as a rule, to get uniformity in a lot of steers picked up around home. Here is the advantage of going to a large market, where you have thousands to select from; but, as a rule, cattle from these markets are wild and unaccustomed to being confined in small yards, nor are they familiar with men on foot. It takes them some time to get accustomed to these new surroundings and new feeds that are offered them. On the other hand, the native cattle will be right at home in the feed lot and ready to give the right kind of returns for the feed consumed as soon as it is offered to them.

A clear conception as to what constitutes a good feeder is also very essential for profitable feeding. The typical feeding steer must be from one of the leading beef breeds; he must be comparatively wide, round, and deep-ribbed; low set, blocky, and have a

broad, level back. A steer that stands high from the ground, is light in the flanks and shallow in the heart girth, rarely makes a good feeder. He should be broad and deep in front, and this should also be characteristic of the hindquarters as well. As much width as possible is desirable if it is not accompanied with roughness of the shoulders and hips. He must be a steer of that type that will respond readily to the feed consumed. Not only this, but he must put it in the right place. Some feeders think that if a steer gains well he is a good feeder; but this is not true in the sense of being profitable. A Jersey or Holstein may make as good gains as an Angus, Hereford, or Shorthorn, but the former are not profitable steers for the reason that they do not put the meat on in the right place, and when they go to market they will sell for $1.50 to $2.50 less per hundred than a steer of the typical beef type.

As to the method of starting steers on feed, almost every feeder has a method of his own. Conditions vary so that it would be hard to lay down a rule that would apply to all. However, there is one rule that would apply in all cases, and that is to start slowly—do not get in a hurry to see your cattle gaining. Many a fine steer has been ruined during the first week or two in the feed lot. In starting cattle in the fall it is a good plan to begin with corn-fodder, when the corn is in good roasting-ear condition, and gradually increase the feed as the corn hardens. Feed stalk and all as long as they will eat the fodder, then feed snapped corn, and take plenty of time getting them on full feed. Five, six, or seven weeks is not too long. Feed on grass as long as you can, or until the weather gets stormy. When changing from pasture to the dry lot, nothing is better than clover hay for roughness—or I suppose in this country you would use alfalfa, but this we do not have in Iowa. As the feeding period progresses the grain ration may be changed to corn-and-cob meal, shelled corn, or corn-meal. Give them a variety of roughness and plenty of it. If your cattle are to be finished in good shape and put in condition to top the market, it will perhaps pay to add oil-meal, or some other by-products with a high protein content, during the last few weeks of the feeding period. In changing from one feed to another, do so very gradually, for cattle changed from one feed to another will invariably eat too much if allowed to do so. Keep good, clean salt before them and see that the water-supply is good. Condi-

tions differ in different localities; feeds are different and prices of feeds vary so much from year to year that it would be hard to prescribe a feeding ration that would be profitable in all localities from year to year. The feeder must study all the conditions and consider the feeds that he has at hand. If they are rightly proportioned and properly fed to a good class of cattle, they will leave a balance on the right side of his bank account.

The experiment stations of the central states have done a great deal of work along this line. The largest cattle feeding experiment yet undertaken was that conducted by the Iowa station last year at Odebolt. The station had received hundreds of letters from cattle feeders throughout the corn belt states requesting information as to the advisability of feeding by-products and stock foods. Realizing the necessity of securing reliable data along this line, it was decided to conduct an experiment under ordinary farm conditions—conditions no better than every farmer in the state could give his cattle—to feed a car-load of each lot so as to overcome the influence of individual animals on the results. The facilities for feeding at the station would not permit the handling of cattle in such large numbers and it was only through the coöperation of Mr. A. E. Cook, of the Brookmont farms, that the work was carried on. The Brookmont farms are comprised of 7351 acres of Iowa's best soil, located near Odebolt, in Sac county. Mr. Cook turned over his entire feeding lots and allowed those best suited for the work to be selected.

The object of the experiment was to determine the full value, if any, of feeding by-products and condimental foods for the production of beef, and it was planned to feed eleven lots of cattle. Lot 1 was fed on corn alone, 2 on corn and oil-meal, 3 on corn and cotton-seed meal, 4 on corn and gluten meal, 5 on corn and gluten feed, 6 on corn and germ oil-meal, 7 on corn and dried blood, 8 on corn and Iowa Stock Food, 9 on corn and International Stock Food, 10 on corn and Standard Stock Food, and 11 on corn and grass. The by-products and condimental foods were furnished by the following companies: Old process oil-meal was used, furnished by the Midland Linseed Oil Company, of Minneapolis, Minn.; cotton-seed meal by the American Cotton Oil Company, of Chicago; gluten feed and germ oil-meal by Glucose Sugar Refining Company, of Chicago; dried blood by Swift & Co., of Chicago; Iowa Stock Food by the Iowa Stock Food Company, of Jefferson,

Iowa; International Stock Food by the International Stock Food Company, of Minneapolis; and the Standard Stock Food by the F. E. Sanborn Company, of Omaha. These products were all delivered free of charge at Odebolt.

Mr. Cook furnished the cattle, yards, corn, and roughage, and they were fed under the direction of the experiment station, or rather under the direction of the companies furnishing the food—that is as to the amount of grain and by-products or condimental foods, as the case may be. But they were all to have the same kind of corn and roughage. With this in view, 220 head of steers were selected from some 500 head which Mr. Cook had running in his stalk fields and on a light ration of snapped corn at the time. The steers were very common grades, Angus, Herefords, and Shorthorns, two years old. They were purchased by Mr. Cook from the Bartlett-Richard Cattle Company, in Western Nebraska.

The 220 head were divided as evenly as conditions would permit into eleven lots of twenty head each, each lot consisting of one Hereford, four Angus, and fifteen Shorthorns, or steers showing some evidence of such blood. The division was made two weeks before the experiment began and the cattle were placed in their respective yards. This was done that they might become accustomed to their yards and all be under practically the same conditions when the feeding started. On the 10th, 11th, and 12th of March, each lot was driven over the scales and an average of these three weighings were taken as a starting weight. The feeding started on the 11th. At first they were fed snapped corn, later corn-and-cob meal, and they were finished with corn-meal fed in connection with the various by-products of condiments of each lot. For roughness each lot had all the wheat straw they would eat, no other kind of roughness being furnished.

Lot 1 was fed on corn alone. They were given 15 pounds at the start, and when on full feed consumed as high as 27 pounds of corn-meal per head daily. As a rule they were always ready for their feed, had good appetites to the end, but did not shed quite as early or look quite as slick as some of the other lots. They weighed at the beginning an average of 1042 pounds, and made a gain of 2.71 pounds per day, shrank 55 pounds in shipping, sold for $7.45, and dressed 58.8 per cent, returning a net profit of $14.49 per steer, made at a cost of $10.71 per hundred.

Lot 2, on corn and oil-meal, at the beginning received 15 pounds

of snapped corn and one-eighth of a pound of oil-meal per head daily, and when on full feed consumed 25 pounds of corn and 4 pounds of oil-meal per steer daily. They weighed at the beginning 1082 pounds, gained 2.51 pounds daily at a cost of $11.02 per hundred pounds, shrank 54 pounds in shipping, sold for $7.50, dressed 60.6 per cent, and returned a net profit of $14.85 per steer. This lot fed very nicely and were the first cattle to shed, and dressed out better than any other lot except lot five, which just equaled them.

Lot 3, on corn and cottonseed meal, received the same allowance of 15 pounds of snapped corn and one-eighth of a pound of cottonseed meal at the start. After 42 days on feed, when the cattle were eating 25 pounds of corn-meal and 2½ pounds of cottonseed meal daily, they were suddenly affected, three of the animals died, the rest went blind and refused to eat. Post-mortem revealed the fact that the stomachs of the animals were very much inflamed, which was supposed to have been due to the cottonseed meal. The cottonseed meal men claim that this was not due to the cottonseed meal, but the cattle were fed exactly the same kind of corn-meal, and wheat straw from the same stack as the other lots, none of which showed any signs of sickness. At the time they were affected they were making a gain of 2.38 pounds per day, at a cost of $9.84. They were dropped from the experiment at this stage.

Lot 4. on corn and gluten meal, were fed 15 pounds of snapped corn and one-eighth of a pound of gluten meal per head at the start, and finished on 24 pounds of corn-meal and 4 pounds of gluten meal per head per day. This lot took kindly to the feed from the start, averaged 1075 pounds, and made a gain of 2.92 per head at a cost of $9.34. They shrank 62½ pounds in shipping, sold for $7.65, or five cents above any other lot, dressed 59.6 per cent, and returned a net profit per steer of $17.99.

Lot 5 on corn and gluten feed, received the same allowance of 15 pounds of snapped corn and one-eighth of a pound of gluten feed, and when on full feed consumed 24½ pounds of corn-meal and 4½ pounds of gluten feed per head daily. They were a little slow in taking hold of their feed at the start, as they did not seem to like the gluten feed until they became accustomed to it, but during the latter part of the test they fed very satisfactorily. They weighed 1025 at the start, made an average gain of 2.88

pounds daily at a cost of $9.65 per hundred, shrank 50 pounds in shipping, being the lightest shrink of any lot. They sold for $7.60 and dressed out 60.6 per cent, and returned a net profit of $17.60 per steer.

Lot 6, on corn and germ oil-meal, received 15 pounds of snapped corn and one-eighth of a pound of germ oil-meal per head daily at the start, and finished with 24 pounds of corn-meal and 4 pounds of germ oil-meal per head daily. The steers in this lot never ate their feed with the relish that the other lots did, and were slow feeders all through the test. The weight at the start was 1075; made an average gain of 2.32 pounds at a cost of $11.64. In shipping they shrank 71 pounds, sold for $7.40, dressed 60.3 per cent, and returned a profit of $12.16.

Lot 7, on corn and dried blood, received 15 pounds of snapped corn and one-tenth of a pound of dried blood at the start, and consumed when on full feed 25 pounds of corn-meal and 1 pound of dried blood per head daily. At first they turned away from the dried blood when it was scattered in their feed boxes, but later, when they became accustomed to it, they ate it with a relish and were never off feed. They weighed 1062 at the start, made a gain of 2.42 pounds daily at a cost of $11.08, shrank 63 pounds in shipping, sold for $7.60, dressed 69½ per cent, and returned a net profit of $15.36.

Lot 8, on corn and Iowa Stock Food, received 15 pounds of snapped corn and one-fortieth of a pound of Iowa Stock Food per head daily, and when on full feed consumed 24 pounds of corn-meal and one-tenth of a pound of Iowa Stock Food per head. They weighed 1015 pounds at the start, made a gain of 2.30 pounds daily at a cost of $10.51, shrank 60 pounds in shipping, sold for $7.40, dressed 59.6 per cent, and returned a profit of $13.09 per steer.

Lot 9, on corn and International Stock Food, received 15 pounds of snapped corn and one-fortieth of a pound of International Stock Food at the beginning, and when on full feed were given 26 pounds of corn and one-seventh of a pound of International Stock Food. This lot fed rather slowly at the start, but did better at the close. They averaged 1016 pounds, made a gain of 1.97 pounds per head at a cost of $13.41, shrank 72 pounds in shipping, sold for $7.20, dressed 59.6, and returned a profit of $6.33 per steer.

Lot 10, on corn and Standard Stock Food, were fed 15 pounds of snapped corn and one-fortieth of a pound of Standard Stock Food at the beginning, and at the close were eating 25 pounds of corn-meal and one-seventh of a pound of Standard Stock Food per steer daily. They weighed 1030 pounds, made an average gain of 2.17 pounds per head daily at a cost of $11.95, shrank 67 pounds in shipping, sold for $7.00, the lowest price of any lot, and dressed 58.7 per cent. According to instructions given by the company furnishing the Standard Stock Food, these cattle were fed but once daily, receiving the whole of their grain ration in the morning. They returned a profit of $5.52 per steer.

Lot 11, on corn and grass, was started in a dry yard, but as soon as grass made its appearance they had the run of a twenty-acre timothy pasture. They were started with 15 pounds of snapped corn, and when on full feed consumed 24 pounds of corn-meal. They weighed at the beginning 1053, made a gain of 2.49 pounds per day at a cost of $10.20 per hundred, and, as would be expected, shrank 84 pounds at shipping, the heaviest of any lot. They sold for $7.55, which was within ten cents of the top, dressed out 59.3 per cent, and returned a profit of $14.79 per steer.

There was little difference in the gains made by the hogs following the various lots. Twenty hogs were placed in each lot at the beginning, and no extra feed was given them. At the end of eight weeks, when the cattle were being fed corn-meal, half of the hogs were taken from each lot. Those following the grass cattle made the best gains. This was perhaps largely due to the amount of feed they got from the grass. Careful check was kept on each lot while they were being shipped, also in the stock yards, and until they were hanging in the coolers. They were purchased by Nelson, Morris & Co., and they reported that lot 4 exhibited the best carcasses, though there was little difference in this respect.

In this test a ration of gluten meal, corn and wheat straw returned a profit of $3.50 per steer more than a ration of corn and wheat straw. A ration of gluten feed, corn and wheat straw returned a net profit of $3.11 per steer more than a ration of corn and wheat straw. A ration of dried blood, corn and wheat straw returned a net profit of 97 cents per steer more than a ration of corn and wheat straw. A ration of corn and grass returned a net profit of 48 cents per steer more than a ration of corn and wheat straw.

A ration of old process oil-meal, corn and wheat straw returned a net profit of 36 cents more per steer than a ration of corn and wheat straw. A ration of Iowa Stock Food, corn and wheat straw returned a net profit of $1.40 per steer less than a ration of corn and wheat straw. A ration of germ oil-meal, corn and wheat straw returned a net profit of $2.33 per steer less than a ration of corn and wheat straw. A ration of International Stock Food, corn and wheat straw returned a net profit of $8.16 per steer less than a ration of corn and wheat straw. A ration of Standard Stock Food, corn and wheat straw returned a net profit of $8.92 per steer less than a ration of corn and wheat straw. Corn alone in this experiment showed up remarkably well, especially so when we bear in mind that it was fed in conjunction with wheat straw as a roughage.

The Iowa station is repeating this work this year, and as experiments to be of the greatest value must be repeated, conclusions can be more definitely drawn as to what is the most economical grain ration for producing beef in the corn belt when the report of this second test is published. R. J. KINZER.

Twenty-five dollars to California? That is the Rock Island's rate —in effect daily. Applies to Los Angeles, San Francisco, San Diego and hundreds of other points in California. Corresponding reductions to Salt Lake City, Ogden, Spokane, Seattle, Tacoma and Portland. Tickets are good in tourist sleeping cars, and you can go west via Colorado or El Paso, as you prefer. Full information at any Rock Island ticket office or by addressing A. E. Cooper, D. P. A., Topeka, or J. A. Stewart, G. A. P. D., Kansas City.

Dr. A. Emch, formerly of this College, sends us a clipping from a Boulder, Colo., paper containing an account of the funeral of Doctor Coman, medical demonstrator at the Colorado State University, and husband of Mrs. Rowena Whaley-Coman, third-year student in 1880. The item says: "The funeral of Doctor Coman was one of the largest if not the largest ever held in this city. Appropriate addresses were made by Dr. L. Giffin and Dr. H. W. Allen." The local editor of the INDUSTRIALIST was intimately acquainted with Doctor Coman and feels like adding that Boulder has lost a good citizen and Colorado University an able teacher and an advanced thinker.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Professor McKeever will address the teachers of Jackson county, at Soldier, on November 14.

The College lecture course opens to-day, November 3, with a concert by Slayton's Women's Symphony Orchestra.

Miss Rose enjoyed a visit from her mother and sister, who stopped over a day while passing through to Denver last week.

The young women of the Executive Department gave a Hallowe'en party in the Girls' Gymnasium last Saturday night to a number of invited guests.

The mid-term examinations are over and the professors are busy working out the results, while the students are anxiously waiting for their yellow envelopes.

Assistants Evans and Weeks, of the Department of Industrial Art, have decorated their rooms with student work in freehand and object drawing done by their classes. Their exhibits in the attic of the main building are worth seeing.

The Military Depurtment has received a library of seventy-eight volumes on military science, history and tactics, by the United States War Department. Also a set of blanks for keeping records. The library will be kept in the armory.

Prof. C. C. Georgeson, formerly of the chair of agriculture at this College, writes from Sitka, Alaska, that his family have gone to Berkeley, Cal., in order to give his oldest daughter, Dagmar, a chance to take a course in the state university.

Lieut. Geo. W. England, of the Sixth United States Infantry, located at Leavenworth, was shown about College by Lieutenant Shaffer, Thursday. The sixth infantry camped at Manhattan over Sunday, on their return from the Fort Riley maneuvers.

The Kansas Academy of Science will meet at Manhattan, *i. e.*, at the Agricultural College, during Thanksgiving week. Secretary Grimsley is making a strong effort to get a large attendance of members, and the Faculty of the College are making arrangements to entertain them in good style.

The classes lately formed for advanced work in music now meet regularly once a week, the octette of female voices on Tuesday afternoon at four o'clock, the octette of male voices on Wednesday afternoon at four o'clock, and the glee club for mixed voices on Friday afternoon at four o'clock.

President Nichols is already at work at the schedule of classes for next winter term. The difficulty of producing an arrangement of studies is increasing with every year. The equation involves several kunnown quantities and a number of limitations, such as lack of classrooms and lack of apparatus.

The senior class of the agricultural course is making an investigation to determine the methods of bookkeeping and farm management in actual practice on Kansas farms. A circular of twenty-two questions has been prepared by the class, and will be sent to many prominent farmers with a request for answers to the various questions. L. A. Doane has charge of the work, and will present the results to the class.

The east branch of the heating tunnel has given a good deal of trouble of late. It has been caving in at one place or another almost every week. A few days ago a large quantity of earth fell from the roof of the tunnel, completely stopping the electric power cable of the physical laboratory. It will be necessary to arch all heating tunnels with brick in order to make them secure. A number of bad places have thus been arched and are perfectly solid.

Lieutenant Shaffer informs us that he has four hundred twenty students enrolled for regular daily practice in the College battalion. These are organized in four armed and equipped companies, two companies of recruits, and an artillery detachment. There is also a band of about twenty four members and a signal corps of eight men. The two companies of recruits have no equipment of any kind and the lieutenant hopes that the Board of Regents will soon be able to impress the U. S. War Department that military drill without arms is a rather discouraging exercise if kept up too long.

During the first week of July the College ordered two dozen six by ten inches by twenty-four feet yellow pine beams for the purpose of supporting the floor of the stock arena in the old barn. The order was placed with a Manhattan lumber firm as a special rush item and numerous telegrams, letters and tracers were sent after it. At times we despaired altogether of getting the lumber, at other times we heard of it one way or another. Last week it finally arrived and we are happy. Newspapers may talk about hard times and laying off men in the East—we in Kansas and the adjoining states have certainly been booming things this summer and fall. No panic for us!

ALUMNI AND FORMER STUDENTS.

Lora Waters-Beeler, '88, writes that she and her husband are now living at Glen Ellyn, Ill., a village about twenty-two miles from Chicago. Mr. Beeler is still in business in Chicago, but they have located their home at Glen Ellyn in order to have a whole acre of ground upon which to put in practice some of the principles of gardening and horticulture learned here.

W. E. Whaley, '86, of Chicago visited the College last week.

R. S. Kellogg, '96, and Mrs. Kellogg announce the birth of a son, Ernest, on October 26.

Martha Cottrell, '94, and Lucy Cottrell Pottorf, '98, visited College recently with their sister Jennie, of the senior class.

C. V. Holsinger, '95, Rosedale, Kan., has built up a flourishing trade in small fruit plants in addition to his large fruit plantations. In a recent catalogue, full descriptions of successful varieties are given.

M. E. Chandler, second year in 1892–'93, as proprietor of the Elmhurst Nursery and Fruit Farm, Argentine, Kan., has recently issued a neat catalogue. It contains good lists of small fruits and flowering shrubs.

Geo. F. Thompson, third year in 1882, superintendent of printing for several years, and now of the Bureau of Animal Industry, Washington, D. C., made a short visit at the College last week and addressed the students in chapel.

W. J. Yeoman, '93, and his classmate, W. E. Smith, visited the College a few days ago. Mr. Smith is still practicing law in Kansas City. Mr. Yeoman is in the clothing business in Mankato, but gratifies his rural instincts by raising standard-bred horses.

A telegraphic message from Chas. L. Marlatt, '84, announces the death of his wife, October 28. Detailed particulars are not at hand yet concerning the sad event. Mrs. Marlatt, while not in good health, had not been alarmingly ill for any length of time.

G. H. Failyer, '77, professor of chemistry here for many years, now of the Bureau of Soils, United States Department of Agriculture, in connection with F. K. Cameron is the author of an article in the October number of the *Journal of the American Chemical Society* upon "The Determination of Small Amounts of Potassium in Aqueous Solutions." The method is a sensitive one, susceptible of a high degree of accuracy under proper manipulation, and has been worked out especially for the determination of potassium in soil extracts.

Confession is said to be good for the soul. The editor had hoped to escape this benefit in connection with a recent occurrence, but it seems to be necessary to take the medicine. Some time since an alumnus sent in a number of interesting items concerning Kansas City alumni. No name was signed, and here is where a confession of sin should come in on the part of the writer. However, the items were turned over to the alumni editor and it was his full intention to insert them, notwithstanding their anonymous origin; but he took such good care of them that he has not been able to find them since. So this will serve as an acknowledgment of receipt, a tender of thanks for the interest the writer showed by sending them, a confession of fault in losing them, and an expression of hope that they may be sent in again.

Historical Society

VOL. 30 NO. 8

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K. S. A. C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K. S. A. C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K. S. A. C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K. S. A. C.) ..... Director of Physical Training

MISS LORENA E. CLEMONS, B.S. (K. S. A. C.) ..... Secretary

JACOB LUND, M.S. (K. S. A. C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K. S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K. S. A. C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K. S. A. C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K. S. A. C.) ..... Assistant in Music
William Anderson, B.S. (K. S. A. C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Ernest C. Gasser ..... Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K. S. A. C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K. S. A. C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N. H. C. A. & M. A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K. S. A. C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K. S. A. C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K. S. A. C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K. S. A. C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K. S. A. C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K. S. A. C.) ..... Bookkeeper
Miss Matilda Doll ..... Clerk in Post-office
Miss Mamie Alexander, B.S. (K. S. A. C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K. S. A. C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., NOVEMBER 10, 1903. NO. 8

HAMPTON INSTITUTE.

A SHORT year ago, on a bright and cheerful southern morning, the large iron steamer Norfolk, of the Norfolk and Washington steamship line, landed the writer at the wharf of historic Old Point Comfort, Va. All night long we had been carried southward by this powerful steamer down the Potomac river, down Chesapeake bay, to the mouth of the James river—a river long since famous because of early colonial events; the first English settlement in 1607 at Jamestown; the many intermediate events up to the timely and decisive battle between the Monitor and Merrimac in civil war times. It was with a feeling of strangeness and delight as we stood there on the wharf, looking across the James river to the south. In partial view was Norfolk, the queen city of the Virginia coast, to the left up the James river over on "Hampton Roads" could be seen ships, ship masts, spars and sails, the great C. and O. elevators, the huge lifting cranes of the ship yards; all these evidences of busy Newport News. And immediately before us and to the right was Fortress Monroe, her modern guns of warfare poised behind impregnable parapet walls, guarding this important avenue of entrance to our country.

A short ride on the street-car brought us to our journey's end —the Hampton Normal and Agricultural Institute. Before us lay new and different scenes from the late hills and mountains of West Virginia; from the busy, lively life of Cornell; from earlier events of life on the Kansas plains, and from those of our own K. S. A. C. Hampton Institute is the father of modern negro schools. It was founded for them. It was founded by a man who believed in helping lift the negro from a lower to a higher life. This school is supported by men and women, mostly of the North, who have unlimited faith in the possibilities of the negro race, once educated. Founded in 1868, by Samuel C. Armstrong, for the education of the children of parents once held in slavery, it has grown

steadily and widened its field of action and usefulness. In 1878 the Indian boy and girl were taken in, and in the years since the negro and Indian boys and girls have worked side by side in the pursuit and struggle for that highest attainment, education. Every fall they gather there; many from poor homes, negro huts; many from our western plains. Every spring time they separate, some not to return; but with their knowledge gained they begin the real work of life—helping their own people.

To such a place, a school, the writer was called to work with and help those negro and Indian boys and girls. A review of the work of this school will be a review of the highest and best effort to help, to uplift the negro of our country. This school teaches and is the embodiment of that sound doctrine, that man shall not eat bread save that he earn it by the sweat of his brow. It trains and teaches the hand as well as the mind. By example it teaches kindliness, cleanliness, thrift, good behavior in all things. The importance of courtesy, politeness, perfect manhood and womanhood, is taught these boys and girls. The best mental, moral and spiritual aspects of education, of life, are presented to them every day of their student life. "Practice makes perfect" is a maxim highly esteemed. These students are taught by practice to build and paint a house, make the household furniture, furnish a house, keep a house, perhaps that they may sometime do it for themselves. They are taught to sharpen a plow, to weld pieces of iron, to shoe a horse. They are taught the more delicate and technical work of the machine shop. Cabinet-making, wood turning and tin smithing are taught as well. Boy students wishing to learn the harnessmaker's or shoemaker's trade may do so in the shops of this school. By constructing nearly all of the many buildings on the grounds, the boys get the valuable and essential practice in lumber, brick and stone house building. On the extensive grounds abundant opportunity is given to learn of steam-pipe fitting and steam heating. A large and busy saw-mill supplies much of the lumber needed in the building construction.

As the boys are taught, so are the negro and Indian girls. In theory and in practice every essential thing is taught them that would and will fit them to be mistresses of homelike homes. The important subject of cookery and proper cooking is taught them; so is modern laundering. Nearly all the laundry work of the whole school is done right in the girls' laundry. The girls are

taught how best and properly to furnish, arrange and care for a house, a room—every room, the cellar, the kitchen, the dining-room, the parlor. They are taught the essential matters of hygiene, tidiness, and cleanliness. As the whole school is run on the dormitory plan, a very good opportunity is given to learn of all these things. The school hospital is not only an agent to help the sick, to alleviate pain and suffering, but it is also instructive. The trained nurses and doctors in charge are attentive to the general health of every student.

The school is a little town of itself. On the grounds are the school bookstore, the dry-goods store, the grocery store, the express office, the post-office, the dairy barn, the necessary stables and sheds, the greenhouses, and a large, comfortable church—an ideal, complete home, as it were, now nearly sixty buildings, on a farm of nearly two hundred acres, on a spot famous for its beauty and its historic interest, surrounded and more or less intimately associated with nearly every interest of human life. To the west are the rich farming lands of Virginia, the gardener's paradise; to the south and east, in the James river and Chesapeake bay, are the rich oyster fields. The important commercial harbors of Norfolk and Newport News, right at hand, call together there every kind of shipping craft of the seas. Partly because of the navy yards at Portsmouth (Norfolk) and the great ship yards at Newport News, the mouth of the James river off Old Point is a noted naval rendezvous, men-of-war of all nations being frequent visitors. So Fortress Monroe, but two miles off, adds interest to the place. The large national soldiers' home, with its beautiful grounds, its hundreds of inmates—wearers of the blue—its beautiful and well-cared-for cemeteries, are enticing attractions to all. In all we can but say that this home-like school should and does build towards intellectual development, good citizenship, and social progress.

It seems that the negro must return to the soil—stick to the soil that he may attain to his best development and usefulness. It is so with any race of people. Especially is this true of the colored race. The negroes must be educated, gotten to the farm, to own their farms and homes; and with thought and activity they will become useful citizens, much more desirable and creditable than the basely immoral, menacing and altogether undesirable class of negroes that are found throughout the South—a thorn in

the flesh, a festering sore that the South alone is most conscious of. The race problem, the negro question, is essentially one of the South. If the colored man has a home on this American continent, it is in the South. It is the place he is most naturally and best adapted to—the place where he is most sensibly esteemed.

Agriculturally, there is a great opening in the South for the negro. There is room, there is chance, there is opportunity. Feeling and knowing this to be true, many of the leading educators of the North and South are working and striving how best to make agricultural education more general; to imbue in the minds of the colored children the love and knowledge of nature, the love of home life, a liking for animals and plants, for the soil, for flowers, gardens, and fields. Farm life in the South has long been accredited as unthrifty, shiftless, a mere drudgery. This detracts from the really desirable features of farm life. So being, the whole matter is receiving marked and vigorous attention in the colored schools of the South. This is especially true of Hampton and Tuskegee; perhaps in a less degree in the many smaller institutions and the common public schools. At Hampton a thorough agricultural education is one of the primary things sought. Its facilities for such attainment, in a sense, are almost unlimited. The school is situated in the midst of the greatest trucking or gardening region of the world. In many respects the soil is ideal. A tidewater Virginian will tell you that the climate is as good as the best. The school receives liberal financial support. The students are chosen from the best of hundreds who apply for admission. A farm of some seven hundred acres is owned and operated by the school. They have garden, trucking and orchard lands; they have school gardens for children and older boys and girls; they have greenhouses and very good facilities for the study of plant life and the properties of soils. All these things point to the evident truth that this school believes that a modern agricultural education is essential for both the negro and the Indian.

The writer was thoroughly impressed in many instances by the zeal and lively interest with which the garden work is taken up. At the Whittier school (kindergarten, founded by John G. Whittier) the little negro boys and girls, some of them mere tots, with their tiny hoes, rakes and weeders, work and care for their little gardens of flowers and vegetables with a willingness and

interest that is surprising. Such an education and early training is sure to be remembered and to help those children in years when they will have become men and women. The lessons of childhood, be they good or evil, are the foundation stones of after life. In Hampton Institute proper the kindergartens are supplanted by larger gardens, with field and advanced class work. The nature study bureau of this school is busy year in and year out encouraging school, garden and field work, distributing explanatory nature-study leaflets throughout the South to negro homes, to schools, teachers, and parents.

A visit by the writer to the negro common schools of Gloucester county, Virginia, will always be remembered. There was given to me the deepest, the best and kindliest impressions of the whole negro life—his hopes, his future. We like and admire good people of any and every race. Here among this negro people it was pleasing and encouraging to see the evidence of self-effort; these people working to advance in education, in religion and in material wealth. The writer fain would tell of two dear black souls who for years have labored with heart and hand among their own people, teaching their children and their children's children, teaching to them the essentials of a successful present and a higher life; but my words to do such workers justice would perhaps appear to the reader as only emotional. On a bright Virginia winter day the writer sat, the only white person there, with a large congregation of negroes, a conference of the school and church workers of the county. It was good to be with them and listen to their discussions. They talked earnestly and with much intelligence of all things pertaining to the home life, the school, the church, business and public life. It all made us feel that we were one of them. And in addressing them later the writer could but pay to them the highest compliment deserving of a sincere people who are working and struggling that they might live better lives and become better and more useful citizens. But leaving this scene, so pleasant and encouraging, we meet with the other side of the picture, so discouraging, so hopeless. The country hamlet, the towns and cities, with their saloons, their evils, the dirt and filth, idleness and crime—crimes meriting a punishment to which justice can lay no claim. The writer must leave this and not mar the better picture—a true picture—that he has tried to show you.

ROBT. E. EASTMAN.

HOG-CHOLERA.

WHILE hog-cholera, like the poor, is with us nearly always, it makes its appearance with greater virulence in years when there is an abundant corn crop. With the increased prevalence of the disease comes a flood of proprietary remedies advertised in the most glowing manner, and with positive assurance that they are sure cures. A brief review of what may be considered as definite information regarding so-called "hog-cholera" may not be amiss, considering the prevalence of the disease at this time, and may save some owners the expense of investing in some of the numerous remedies on the market.

Hog-cholera undoubtedly causes a greater loss to the live-stock industry in the Mississippi Valley than any other infectious disease of animals, and possibly more than all others combined. It is impossible to form a financial estimate of the loss, but it is certainly enormous

There are several reasons why hog-cholera is more prevalent in years of large corn crops. In these years there is more traffic in swine and consequently greater danger of infection from public stock-yards, cars, etc. It frequently happens that the disease is introduced into a neighborhood by shipping in swine that are infected, and from this focus often spreads over considerable territory. Another reason for the greater prevalence of hog-cholera is the tendency to an exclusive corn diet. It is a well-established fact that, while corn is a cheap and fattening food for swine, in some manner it weakens the natural immunity or power which an animal possesses to resist the infection of contagious disease, and in this manner predisposes them to attacks of hog-cholera, which they might, under normal conditions, have the power to resist.

Under the common term "hog-cholera" there are three separate diseases of swine that have been definitely isolated. First, and least serious, is a disease technically known as swine-plague. It is in reality an infectious pneumonia or inflammation of the lungs. It is caused by a minute germ that, in general appearance, resembles the germ of hog-cholera, but the germ of swine-plague is not free swimming. This germ seems to be widely distributed and may be present in any bunch of swine without causing any ill effects. If, however, the animal's constitution is weakened from any cause the germ of swine plague gets a start and an infectious pneumonia follows that may cause considerable

loss. The symptoms of swine-plague are exhibited by a cough and soreness of the lungs. When swine-plague alone is present it can be easily and successfully treated by isolating the ailing animals, putting them in uninfected quarters free from dust, and reducing the food to a small allowance of slop or gruel which should contain some tonic medicine, such as the Government hog-cholera remedy. Swine-plague, however, is usually associated with hog-cholera or other disease, and the combination is a serious proposition.

Hog-cholera is a contagious inflammation of the lining of the bowels, and in some respects resembles typhoid fever in man. It is caused by a minute free swimming germ that has been definitely known for many years. It is a serious disease of swine for which no satisfactory remedy has been discovered. The line of treatment indicated for swine-plague is probably as good as any.

Recently the Bureau of Animal Industry at Washington has discovered a disease very similar to hog-cholera that is not caused by the hog-cholera germ, but the indications are that the germ or cause of this form of hog-cholera will soon be definitely isolated.

In view of the well-established fact that there are at least three separate and distinct diseases commonly grouped under the term "hog-cholera," the claims made by owners of proprietary remedies of a sure cure should be looked upon with more than ordinary suspicion. The writer's experience with hog-cholera cures has been sufficient to shatter faith in all so far as true hog-cholera is concerned. There are undoubtedly many cases where bunches of swine are suffering from indigestion, over-feeding, or some purely local infection, that may present some symptoms of hog cholera, but which is not hog-cholera; such cases will respond to judicious dieting and treatment. It is such outbreaks as these which frequently lead an individual to conclude, erroneously, that he has a "sure cure" for hog-cholera.

In the past, during an outbreak of hog-cholera, it has sometimes happened that the owner has shipped all apparently healthy animals to market, undoubtedly including many that are infected. At the beginning of the present year the government issued stringent quarantine regulations preventing the shipping of infected swine into any state, territory or public stock-yards.

This measure will undoubtedly have a beneficial effect in preventing the spread of swine diseases, but it only applies to interstate trade and public stock-yards. The sanitary control within a state is left entirely to the states. In this state the Live Stock Sanitary Commission has not assumed the responsibility for the enforcement of the laws relative to diseases of swine. The enforcement of these laws is with the general public and, as with many other regulations, where no one is definitely appointed to enforce them they are as a rule of little value.

During the prevalence of hog-cholera, when strict precautions should be taken to prevent the spread of the disease, people, because of familiarity with the disease, seem unusually careless, not only regarding the proper control of the living but the disposal of the dead. The following brief summary of the laws of Kansas relating to the subject will indicate that it is the enforcement of the law and not the laws themselves that are at fault:

"Owners are required to bury or burn hogs that have died from disease, within twenty-four hours. The maximum penalty being a $100 fine. For selling diseased swine without giving full information regarding the disease, or for selling swine that have died of disease, or for throwing or depositing dead swine in rivers or running streams, there is a maximum penalty in each case of a $100 fine. For knowingly allowing diseased swine on public highways or within one hundred feet of the same, or on uninclosed land, there is a maximum penalty of $500 fine, six months imprisonment, and liability for damages resulting."

There is no doubt that if both the government and state regulations were rigidly enforced the losses from swine diseases could be greatly reduced.

N. S. MAYO.

The short course in agriculture begins January 5, 1904. Every young farmer in the State who cannot take the long course in agriculture at this College should take the short course. For the time and money required the short course in agriculture offers greater advantages than any other course taught in College. Do not get the idea that you know it all. You can learn many valuable things about farming in the twelve weeks of short-course work.

THE WINTER-TERM SHORT COURSES.

THERE are large numbers of young people who from lack of means or time are unable to take an extended course of study, but whose usefulness in the world would be much increased by a little special training. Their earning capacity in the household or on the farm is far from what it might be, and they are thus handicapped in the struggle for a livelihood. To bring to this large portion of the "industrial classes," even in small measure, the "liberal and practical education" provided for by the organic act, the College has established certain short courses of study, with practice.

The teaching in these courses, while no whit less accurate than in the others, is upon a different plane. Taking students without scientific or mathematical training, the instruction must be more largely a giving of facts, without an elaboration of the underlying principles which the regular courses afford. The work is intensely practical. Studying such texts as any bright young man or woman can understand, receiving lectures of the same type, and putting into daily practice through industrial exercises the facts and principles learned in the classroom, the student cannot but be greatly benefited. It is hoped, too, that in many cases young people who had thought that they could not afford a four-year course will, by this taste of the advantages and pleasures of an education, be led into the regular courses.

These courses are put at the season of the year which seem likely to accommodate the most students, those for young men being given in the winter term, when farm work is more slack. Three such courses are now offered: A farmers' course of two winter terms, a dairy course of one winter term, and a farm dairy course of one winter term.

REQUIREMENTS FOR ADMISSION.

Persons at least eighteen years of age and of good moral character are admitted to these courses as follows:

Persons between the ages of eighteen and twenty-one will be admitted upon presentation of common-school diploma, grammar-school certificate, teacher's certificate, or high-school diploma, or upon passing an examination in the following subjects: Reading, writing, spelling, arithmetic, grammar, geography, physiology, and United States history. Persons over twenty-one will be admitted without examination, but should have sufficient education to enable them to understand the simple text-books used, and to handle readily problems in common and decimal fractions and percentage. They will be required to attend strictly and constantly to their duties or leave. They have the same free use of the College liabrary that other students have. Owing to the peculiar nature of the work and to the slight degree of preparation which it assumes, ***students are required to be present at the very beginning of the course, and those applying later will not be admitted.***

The short courses are in no sense equivalent to the long courses, and no one should take a short course who can take a whole or even a part of one of the long courses. All of the common-school branches are taught each

term; all of the first-year subjects, except elementary botany, which is not taught during the winter term, and nearly all of the second-year studies are taught each term; so that it is possible for one to get nearly all subjects of the first two years by attending during the winter terms only.

FARMERS' SHORT COURSE.

First Year, Winter Term, Twelve Weeks. January 5 to March 25, 1904.

Crop Production	5
Feeds and Feeding	5
Breeds of Live Stock	5
Stock Judging	5
Horticulture	5
Carpentry	5

Second Year, Winter Term, Twelve Weeks. January 5 to March 25, 1904.

Botany	5
Elementary Physics	5
Farm Mechanics and Management	5
Diseases of Farm Animals	5
Grain Judging	5
Blacksmithing or *Traction-engines*	5

DAIRY COURSE.

Winter Term, Twelve Weeks, January 5 to March 25, 1904.

Dairying	5
Feeds and Feeding	5
Diseases of Dairy Animals	2½
Bookkeeping	2½
Butter- and Cheese-making	5
Dairy Practice	10
Boiler and Engine	5

FARM DAIRY COURSE.

Winter Term, Twelve Weeks, January 5 to March 25, 1904.

Dairying	5
Crop Production	5
Feeds and Feeding	5
Breeds of Live Stock	5
Stock Judging	5
Carpentry	5
Dairy Practice	5

NOTE.—Figures following subjects indicate hours per weeks.

EXPENSES.

TUITION IS FREE. An incidental fee of $3 per term will be charged all students from Kansas. Students from outside of Kansas will be charged an incidental fee of $10 per term and an enrolment fee of $10. Rooms, board and washing are not furnished by the College. Board, with furnished room, can be procured in private families at from $2.50 to $3.50 per week, or table board in student clubs from $2 to $2.25 per week. Furnished rooms, without board, can be obtained at from $3 to $5 per month. Washing costs from 50 cents to 75 cents per dozen. Books cost about $3 per term.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99]..... Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Miss Gertrude Rhodes is assisting in the College post-office during the absence of Miss Doll.

Doctor Mayo and Professor Erf attended a farmers' institute at Indian Creek, near Topeka, last Friday.

The Animal Husbandry Department is carefully culling out the undesirable brood sows. Those retained will be registered in the future.

The College has received a fine Tamworth boar recently purchased from Mr. Freelove, of Clyde, Kan. The selection was made by Asst. R. J. Kinzer.

The College has been unusually fortunate this fall in getting eight high grade and pure-bred dairy heifer calves, mostly from Jersey or Guernsey parents.

Nine of the sows of the Department of Animal Husbandry have recently farrowed sixty-three pigs—an average of seven pigs per sow—all in good and lively condition.

Do not husk and crib corn when it is too wet. The greatest loss to the buyers and shippers in handling corn comes from the presence of too much moisture in the kernel, which causes it to sprout or mold when corn is stored in large quantities.

The College football team scored an easy victory over the Clyde eleven, at Athletic Park, on November 2, the final result being 11 to 0. Another game was played on November 7, with the Washburn eleven, who came here on a special train with banners and a brass band. The result was 34 : 0 in favor of Washburn.

The four-roller "Star" corn-husker has arrived and is in position ready for work. If the good weather continues, the Farm Department will begin husking corn this week. All of the corn was cut up and is now in the shock. It will be husked with the new machine, which also cuts up the stalks and by a blower attachment elevates the cut stalks to the mow or stack.

The promised experiment with a lot of sixty-nine pigs to test the relative feeding qualities of the various breeds and cross-breeds in the feed yard has recently commenced. The bunch consists of pure-bred Poland-Chinas, Duroc-Jerseys, Berkshires, and crosses between these breeds. The experiment will not involve much science, but it will be highly interesting to many farmers.

The wet weather has been favorable to growing wheat and the starting of young grasses but has greatly delayed corn husking and fall work. The weather has been especially favorable to late seeded alfalfa and grasses and late seeded wheat.

The pure-bred Jersey cow Lorne's Oonon 135969, recently sent to the College for a year's butter test, by Mr. Fred Zimmerman, of Moray, Kan., has just dropped a fine heifer calf. The owner hopes to get the cow into the "Advanced Dairy Register" which, as we understand it, is a kind of "Gotha Calendar" of the aristocracy of the dairy breeds.

A bushel of carefully selected seed-corn, which is well dried and properly stored, ought to produce four hundred bushels of corn next season if planted in good soil, with good care and cultivation, and a fairly favorable season. When we consider the value of a bushel of good seed corn, is the proper selection and care of it not well worth the attention of every farmer?

To care for seed-corn in the right way, every farmer should have a dry, well-ventilated seed-room from which the rats, mice, birds and chickens may be shut out. Hang the ears up or pile them on racks or crates and let the corn dry thoroughly, furnishing heat from a stove, if the weather remains damp and cold, so that the corn may be fully dry before freezing weather sets in.

If seed-corn has not already been gathered it should be selected during the husking. A small box should be fastened to the rear end of the wagon into which the choice ears may be thrown. This method is preferable to selecting the ears from the crib, because it gives an opportunity to observe the stock as well as the ear. Only well-developed ears, at a proper height, on vigorous, healthy stalks, should be chosen.

Frederico Sarabia, a young Filipino who attended College last year, has returned for another year. During the summer he worked as a waiter in the Eureka Lake hotel, and Mr. Dewey is assisting him to get an education. Sarabia is a bright young man and a hard worker. He can speak three different languages and has done considerable work in Latin, which he studied in a Jesuit college in Manila before he came to the States.

We pride ourselves with the fact that the young men and young women who come to the Agricultural College for study and work have no use for the foolish and destructive follies of the would-be students at many higher institutions of learning. Our buildings are safe from wanton destruction; our pupils know how to use their leisure hours to advantage; there are no class fights and no cane rushes, and it is with regret that we must confess for once that three of our young men should have allowed themselves to be engaged in a quarrel with Manhattan city boys on Hallowe'en night. It was a forgetfulness that landed them behind the iron bars of the city prison for a few hours and taught them a wholesome lesson. The other twelve hundred behaved as well on that day as on any other—like perfect ladies and gentlemen.

It will be remembered that the last legislature passed a law giving the county commissioners the right to levy an assessment of five mills on all property within the county for the purpose of exterminating prairie-dogs. Prof. D. E. Lantz says that fourteen counties have availed themselves of this privilege and are now making preparations to buy the Agricultural College "Mixture," in large quantities. The Indian has gone and the prairie-dog must go, too.

Eight years ago President Nichols, at that time professor of physics, constructed an electric clock bell system for the College, which is still doing perfect work for us. Since that time he has been frequently called upon to construct similar systems for complicated time signals. He is at present at work on a bell system for the schools of Ellsworth. The clock will ring six different programs and give two hundred bell signals every day, distributed in eight class-rooms.

The last number of the *Ruralist*, published at Sedalia, Mo., has a well-written article on "County Schools of Agriculture," from the pen of C. K. Davis, '91, principal of the Menomonie high school. The article is illustrated by several photo-engravings from the classes at work in the laboratories of the Menomonie agricultural school. Concerning the financial condition of the institution the article says: "The expense of the past year serves as a good basis from which to judge the future cost of running. The actual cost of maintenance for the year ending June 30, 1903, was $5979.48. Dunn county receives from the state of Wisconsin this year the sum of $3986.32 because of maintaining a school of agriculture and domestic economy. This is two-thirds of the cost of running the school the first year. This leaves $1993.16, which was paid by Dunn county. Under the law as amended last winter, the state will give annually an amount equal to two-thirds of the running expenses of the school, providing that the amount given shall not exceed $4000 a year to each of only four such county schools in the state. In other words, the state pays twice as much toward running the school here as Dunn county pays. Let us see what this means. We have reason to believe that the annual cost to the county will be about $2000. The assessed value of taxable property in Dunn county is over $10,500,000. Any person with an assessment of $100 will pay less than two cents to support the school. Property assessed at $1000 will require a payment of less than twenty cents a years, because of this school. Thus it is seen that the annual cost is almost nothing to the individual taxpayer." We agree with the article when it says: "When such are the facts, all who may have had some fears regarding the matter of annual cost may feel at ease, for surely a county in an agricultural region can easily support its own farmers' school." And we do not see any reason why farmers should not make efforts to have schools where agricultural science forms the main subject of instruction as well as the professionists in the cities have schools where Latin and Greek are being taught.

The Fifth District Federation of Women's Clubs will meet in Manhattan, Wednesday, November 11, and remain in session till Friday. They expect to visit the College in a body on Thursday afternoon.

Milk is rather scarce in the College creamery and has been all fall. The departmemt is at present turning out about four hundred pounds of butter per week. As a peculiar fact it may be mentioned that the College is selling a part of its butter in Ellis county. Three shipments were made to Hays City within the past three weeks.

ALUMNI AND FORMER STUDENTS.

C. N. Allison, '01, has located at Cordell, Okla., where he is doing much better than he expected to in his profession, dentistry.

Capt. W. A. Cavenaugh, '96, of the Sixth United States Infantry, visited College a few hours while his regiment was in camp.

H. B. Holroyd, '03, of the Bureau of Forestry, is home on a two-weeks' leave of absence, after which he will report for duty at Washington, D. C.

May Willard-Emrick, '95, Portland, Ore., with her two children, visited the College and relatives last week. She remains in the state until December.

C. B. White, '99, has moved from Hudson, Colo., to McPherson, Kan. He does not say what his present occupation is, but wishes the Experiment Station bulletins to reach him.

We learn from the *Herald* that G. W. Skow, junior in 1902, has a position as electrical engineer in the signal service of the Chicago Northwestern railway, with headquarters at Chicago.

Nellie Kedzie-Jones, '76, is now "the minister's wife" in Kalamazoo, Mich., where Mr. Jones is pastor of a Congregational church of six hundred members. They find themselves very pleasantly situated.

Dalinda Mason Cotey, '81, professor of domestic arts, Utah Agricultural College, recently read a paper before the arts and crafts section of the Utah Teachers' Association on "Manual Training in its Relation to Domestic Science and Art." The manifold benefits of such training were well brought out.

The home of W. S. Arbuthnot, '91, and wife is darkened by the death of their little son Russell. The Lebanon *Times* says: "The death of Little Russell Arbuthnot takes a bright jewel away from Lebanon. He was loved by all; had more friends in the city of Lebanon than anybody else. He was our boy, my boy, your boy, and a brighter, more honest, loveable little fellow never lived. There were more sad hearts, more tears shed, more mothers sighed and pressed their own babies and boys to their bosoms because of this death than ever before in Lebanon's history."

Historical Society

VOL. 30 NO. 9

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - *PRES. E. R. NICHOLS*
Local Editor, - - *PROF. J. D. WALTERS*
Alumni Editor, - *PROF. J. T. WILLARD*

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
JOHN D. WALTERS, M.S. (K. S. A. C.).....Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) .....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.).. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.)..... .....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York)...Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin)..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College)..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University).....Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A..Prof. of Military Science
JOSHUA D. RICKMAN, (I.T. U.).....Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) .....Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S. A. C.).....Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S. A. C.).....Librarian
MISS ESTELLA M. FEARON, B.S. (K.S. A. C.).....Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S. A. C.).....Secretary

JACOB LUND, M.S. (K.S. A. C.).....Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave....Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal).....Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University)....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) .....Asst. Professor of Mechanical Engineering

Miss Ada Rice, B.S. (K.S. A. C.).....Instructor in English
Walter E. Mathewson, B.S. (K.S. A. C.).....Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S. A. C.)... ..... Assistant in Music
William Anderson, B.S. (K.S. A. C.).....Assistant in Mathematics
Miss Gertrude Barnes..... .....Assistant Librarian
William Baxter.....Foreman of Greenhouses
Louis Wabnitz ....Foreman of Machine Shops
Ernest C. Gasser.....Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K.S. A. C.).....Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School)..... .....Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) .....Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music)..... .Assistant in Music
Ambrose E. Ridenour, B.S. (K.S. A. C.)..... ....Foreman in Foundry
Geo. A. Dean, B.S. (K.S. A. C.) .....Assistant in Entomology
Leslie F. Paull, A.M. (Brown University).....Assistant in Botany
Miss Emma J. Short..... .....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S. A. C.)..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S. A. C.)..... .....Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A. & M.A.).....Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University)..... ..... Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S. A. C.).....Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn).....Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago)..... ..... Assistant in English
Miss Helen Thompson, B.S. (K.S. A. C.).....Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal)..... ..Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S. A. C.).....Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ....Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College).....Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K.S. A. C.)..... ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S. A C.)..... .... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University).....Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K.S. A. C.) ....Executive Clerk
Miss Alice M. Melton, B.S. (K.S. A. C.)..... .....Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S. A. C.).....Bookkeeper
Miss Matilda Doll.....Clerk in Post-office
Miss Mamie Alexander, B.S. (K.S. A. C.)..... ....Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S. A. C.).....Clerk in Botanical Department
Charles Hughes.....Secretary to the President
William R. Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., NOVEMBER 17, 1903. NO. 9

GEORGE WILLIAM CURTIS, THE APOSTLE OF CIVIL SERVICE REFORM.

NO nation of modern times has had more tremendous problems to solve or problems more difficult of solution than those that have come to the United States. The life of our country has been a strenuous life. From the day when our fathers declared American independence to these morning hours of the twentieth century—for more than one hundred twenty-five years—we have had to meet stupendous difficulties. The fact that ultimately we have faced these difficulties unflinchingly has doubtless contributed not a little to that robustness of character for which we Americans pride ourselves and to that stability of government with which we have thus far been favored. This latter characteristic is well deserving of emphasis; for in this particular the experience of America is unique in the history of modern times. Since the adoption of the constitution our republic has undergone fewer constitutional changes than has any great European power, with the possible exception of Russia. It has maintained this stability, moreover, in spite of tests that would have resulted in political revolution in almost any other nation on the globe.

But, although we have thus far weathered all storms, let us not therefore assume that hereafter all is to be plain sailing. Not all the grave questions have yet been settled. There are still difficulties before us. Shoals and reefs that threaten to wreck our bark must yet be passed before we can be out upon the open sea with full sail and a favoring breeze. Scylla threatens on the one hand or Charybdis on the other, and it will need steady eyes and clear brains and strong nerves and persistent wills on the part of us and of the generations yet to be if we would avoid disaster. Our vicious system of almost unrestricted immigration, the Indian question, the still more dangerous and increasingly ominous negro problem, the saloon in politics, the alarming growth of trusts, questions growing out of our newly acquired

territorial possessions—these are some of the clouds that to-day loom above our political horizon and frown upon us with threats of wreck.

To solve some of these problems will involve the work of years, perhaps of generations; but find a solution we must, or go down and let the armies of a worthier civilization march over us. It took forty years or more to get rid of slavery, and it was abolished at last only at the cost of the bloodiest war of modern times.

One of the greatest difficulties with which we have ever had to grapple is the reform of the civil service. This reform is only partially accomplished as yet, and many years may still be required to carry it to completion. In the present article I wish briefly to review the conditions that made such a reform imperative and to recall some of the early steps in the movement, especially as related to the services and leadership of George William Curtis.

The constitution provides that the president "shall nominate and by and with the advice and consent of the senate shall appoint . . . . all other officers of the United States whose appointments are not herein otherwise provided for and which shall be established by law." In the early years of our history this power of appointment was exercised in the main in a perfectly unpartisan manner. It was not until Andrew Jackson became president, in 1829, that the theory of Senator Marcy, of New York, that "to the victor belong the spoils of the enemy," was adopted as a settled creed in national politics. The creed became at once immensely popular, however, with the party in power, and was accepted without question and practiced with religious fidelity by Jackson's successors in the presidency for the next fifty years.

As a result of the system thus inaugurated Washington became the Mecca of political devotees. At every change of administration there was witnessed a mighty pilgrimage to the national capital of immense hordes of hungry place hunters, seeking their reward for services rendered during the campaign; the question of appointment depending not upon fitness for the positions sought but rather upon supposed usefulness in placing the successful party in power. The inevitable consequence was that federal offices came to be largely filled with corrupt incompetents. Nor was this all. These partisan officeholders became an

organized army in the employ of the government, the retention of whose positions was dependent upon liberal contributions to campaign funds and ardent labors for the success of their party.

It was inevitable that such a system should result in the most corrupt civil service on earth outside of Turkey. It became rotten through and through—an offense to all decency. Like the crime of Hamlet's uncle, it was "rank" and "smelled to heaven." Slavery itself was not a greater menace to our institutions; for this was an evil that could not be given "a local habitation and a name." It could not be shut up in a corner of the nation, with a fence built around it, until the time should come to blow it out of existence with gunpowder. It was so subtle a malady, it so pervaded and permeated the entire body politic, that its friends and defenders were found everywhere. It was Tammany on a large scale—not limited to the control of a city or a state, but coëxtensive with the nation; not restricted to the bounds of a single party, but claiming and possessing the adherence of all parties. The politicians especially cherished it. Congressmen and senators found in a partisan civil service a useful method of influencing elections and a convenient medium of paying political debts. They were not likely, therefore, to be very enthusiastic supporters of reform. Those politicians who recognized and denounced the evils of the system usually had their spasms of political virtue when they were out of office.

For there were those that pointed out the dangers of the custom when it was yet a new thing under the sun. For example, Daniel Webster had insisted that such a system would "change the character of our government; that the same party selfishness that drove good men out of office would push bad men in; that if not checked good men would grow tired of the exercise of political privileges and abandon the government to the scramble of the bold, the daring and the desperate." But Mr. Webster was not in office when he thus trembled for his country. When he became secretary of state, after Jackson had shown how to keep a party in power, he seems to have had no scruples about imitating the illustrious example of that distinguished president. Henry Clay, also, in 1832 said: "It is a detestable system, drawn from the worst periods of the Roman republic, and if it were to be perpetuated, if the office honors and dignities of the people were to be put up to a scramble and decided by the results of every pres-

idential election, our government and institutions would finally end in a despotism as intolerable as that of Constantinople." But Mr. Clay was also in opposition. When his party was in power, ten years later, we do not hear of his expressing anxiety for the safety of the republic because of the spoils system. He objected to it only when it was desirable to "turn the rascals out." When the capable and good people of his own party happened to be at the crib, he seemed to think the system a wise provision of a beneficent providence for the reward of the righteous, and if while rewarding the righteous it at the same time happened to thump the unrighteous far would it be from him to question the ways of providence. Mr. Calhoun, likewise, declared that were not the system "put down it would end by putting down the government." But Calhoun, too, was then spokesman of the party that at the time was shut out of paradise. He was horrified at the presence of the serpent in the garden, because the fellows on the other side of the fence were getting all the apples.

It was not until 1871 that any attempt was made by the party in power to reform the civil service, and this only when the spoils system had come to be a source of reproach and shame to the nation. It was a feeble attempt, however, and was carried out at "a poor dying rate;" and even this much was attempted, not because the majority of the politicians wanted reform, but because the people were beginning to make themselves heard on the question. Congress rather contemptuously threw a bone to the reformers, thus hoping to silence the clamor for a time and trusting to the future to turn the people's attention to some less disagreeable topic. "After us, the deluge," seems to have been an important article of their political creed.

The best that could be obtained from congress that year was in the form of a "rider" to the appropriation bill "authorizing the president to prescribe rules for admission to the civil service, to appoint suitable persons to institute inquiries touching the matter and to establish regulations for the conduct of appointees to the civil service."

The day after the bill was passed President Grant appointed George William Curtis and six others to constitute the advisory board. Mr. Curtis did most of the work of the board, made its report, and guided it in the formulation of rules regulating appointments. In the spring of 1872 the rules were put into oper-

ation and applied with very satisfactory results in the federal offices in New York and in some of the departments at Washington.

But the politicians in congress were not yet ready to lay aside their means of awarding merit, and after three years of grudging sufferance they refused to make an appropriation in support of the law. When the president perceived that a majority in congress was not in favor of the law he suspended its operation. Thus ended the first lesson. The attempt had been sneered at by some of those who were feeding at the public troughs as "a delusion and a snare," as an irridescent dream of dreamers who dreamed that they had been dreaming.

But the experience was not without value, nor did the advocates of reform lose heart. Mr. Curtis had long urged the abolition of the spoils system. One of the ablest writers, one of the truest patriots, one of the strongest thinkers, one of the most eloquent orators of his generation, he devoted his great powers in the full maturity of his superb manhood to the reformation of our civil service.

For a number of years there had been on the part of the people at large a growing recognition of the need of reform, yet only a few, relatively, were keenly alive to the enormity of the evil or fully awake to the difficulty of destroying it. They knew not how firmly entrenched the spoils system was in the hearts of the party "bosses." To the task of educating public opinion and the public conscience, Mr. Curtis unceasingly devoted himself. He had one coign of vantage in that he himself was neither an office-holder nor an office-seeker. More than once he had been offered high position, only to decline such proffers. His motives no one could question. Still further he was known as a man of independent opinions. While ordinarily he had acted with one of the great political parties, he had never hesitated to criticise or oppose that party whenever it pursued a course that he thought to be wrong. These facts gave him great influence with the common people. He used that influence for the noblest ends. The people believed in him and he never betrayed their trust.

As political editor of *Harper's Weekly*, Mr. Curtis reached with his pen a large number of readers, probably not less than 500,000 directly, while the publication of his articles by other journals and the circulation of his addresses and other writings in pam-

phlet form through the mails and by reform clubs enormously increased his audience. The persistent use of all these channels of communication for a series of years enabled him to reach and influence practically the entire thinking population. The leaven of his thought had gone far toward leavening the whole mass of the people. Like rain upon the mountain, his ideas of the need and methods of reform percolated down through the soil of national thought to prepare it for fruitfulness, and gushed forth at last in fountains of living waters to fertilize the great plains of public opinion and cause them to bring forth abundant harvests. For the reform did come at last—or at least it begun.

But the work was slow and discouraging. For many long and weary years Mr. Curtis preached "the baptism of repentance," but he seemed like "the voice of one crying in the wilderness." Yet his preaching was not altogether in vain. Many believed, and some even of the pharisees—the Washington politicians—repented, confessing their sins, and became converts to reform. Civil service reform associations were organized in many states. Of that in New York and of the national league Mr. Curtis was president. Every year for ten consecutive years he delivered the president's address at the annual meeting of the league. These addresses constitute a body of arguments and eloquence on this subject not surpassed in American oratory during the latter half of the nineteenth century. With Mr. Curtis the struggle for reform of the civil service was but another struggle for popular freedom.

The reform itself did not really begin until the murder of President Garfield, in 1881. That bloody deed startled the people as by a lightning flash at night. After the first bewilderment had passed, the assassination of the president by a disappointed office-seeker aroused the whole nation to the thought that the spoils system was responsible for the "deep damnation of his taking-off." At once there was a universal demand for the abolition of the system which lay at the basis of the atrocious crime, and even the most partisan of the nation's legislators heard its thunder. Mr. Pendleton, who had been the democratic candidate for vice-president in the McClellan campaign, introduced into the senate a bill authorizing the president to fill the offices by the merit system. The law was passed and signed in the early days of 1882, nearly twenty-two years ago. Since that day the merit

system has been much enlarged in its scope and greatly extended in its application. President Arthur favored the reform, President Harrison extended it somewhat, and President Cleveland developed it extensively, bringing more than 80,000 of the public servants—nearly half the entire number—under the merit system. Not improbably the time is near at hand when all save the few political offices will be brought under the reform rules. The movement has already proven its right to be. In every way a higher average of public service has been the result of the new method. Thus is our country solving this problem, and the fact that it is so doing is due more than to any other one cause to the intelligent, patriotic, persistant labors of the scholar, the writer, the orator, the statesman—George William Curtis.

CLARK M. BRINK.

HISTORIC MINDEDNESS.

THE study of history has recently assumed a new importance in the educational world. A decade ago it formed a very insignificant part of the average course of study. To-day our best high schools are offering three years of history. In fact, some schools are offering a full four years' course in history. A general effort is being made to conform as nearly as possible to the recommendations made by the committee of seven of the National Educational Association in its report on the study of history in schools. This committee recommended a four-years' course, as follows: (1) Ancient History, with special reference to Greek and Roman history, but including also a short introductory study of the more ancient nations. This period should also embrace the early Middle Ages, and should close with the establishment of the Holy Roman Empire (800), or with the death of Charlemagne (814), or with the treaty of Verdun (843). (2) Medieval and Modern European History, from the close of the first period to the present time. (3) English History. (4) American History and Civil Government.

This report, made in 1899, suggests the modern attitude of educators toward the study of history. Formerly it was quite universally thought that history was simply an information study, and that by a sort of cramming process a list of dates and names could be memorized by a brief period of study. Now history has come to be recognized as constituting what may be called es-

sentially a culture study. Some teachers, however, have been rather led astray by the so-called scientific method in history or by the much-lauded source method. Each of these contains good features, but by emphasizing method they sometimes fail to achieve the desired result. In teaching history it is fundamental that one should always have clearly in mind the real object of the study. The subject must be grasped as a whole. The end must be known from the beginning.

In the field of history especially the teacher must indeed be an educator—or better, a "radiator." The fire of enthusiasm must burn in his soul. He must be so filled with the subject and understand so well the real importance and the relative significance of each portion of the subject that he enthuses the class and leads them to feel the moving life, to see the growing institutions, and get into the very spirit of the people of each period or stage in "the story of human progress." The student must learn that "history has to do with the becoming of past events; not simply with what was, but with what came to be." "For the historian nothing is, but everything is becoming." He must also learn the important lesson that even such an institution as that of the absolute monarch existed because of the good that was in it for the people whom it served, and not because of its evil. He may even come to realize that the opposing political party is not composed entirely of rascals. It has some noble men and women in its ranks. It stands for some good principles and is an important factor in our government if it but fills its mission well.

One effect of historic reading should be to make us generous minded and more charitable, knowing there is some good in each institution of man. Yet I would not discourage the formation of "honorable prejudices" in questions of absolute right and wrong. Another effect should be to make us wise in our demands for reform. One lesson of history is that abuses are usually corrected best by the slow process of changing growth, backed by constant effort, rather than by changes that may be accomplished in a day or a year.

A knowledge of history makes us men of wider mental horizons, and of keener and more interested vision. We only know ourselves by a study of others; America by a study of Europe; the present by a study of the past. The church as a world institution means vastly more to one who has studied its origin,

followed its growth to a position of world sovereignty, both temporal and spiritual, thence through the great Protestant revolution of Luther and the Puritanism of Cromwell, of Milton and of Pilgrim Fathers down to its present freedom and diversity of government and of belief. Governments may well be appreciated after one has studied the Dark Ages and medieval feudalism and anarchy. Our own government and the institutions of which we ourselves are a part are filled with a new meaning and with a large, new interest after we have carefully studied our nation's past history with its intensely interesting problems and their more interesting solutions—even in the tragedies of revolution and of civil war.

Remembering, then, that history is primarily a culture study and that considerable time must be spent on some one period in order to achieve the historic ideal, that we must work and linger over some portion of history long enough really to understand it and to come into sympathetic touch with its pulsating life, we are ready to decide somewhat with reference to its place in a college curriculum. It is perhaps not needed in the earlier years of the course, but it is imperative that one should have learned the spirit of historic mindedness before he goes forth as an educated man. In our own institution, with its eminently practical trend, the period to be emphasized might well be American history and government. For such a course it seems to me that at least one full year is desirable. Such a course would include our present term of civics. It should give American history its proper setting in the larger sphere of world history. It should include a careful study of the development of the English colonies and their government out from England with her history and her government and her ideals. It should examine contemporary European events throughout the entire course, and note their influence on American history and government, and by comparison the influence of America upon Europe. Of course it should include a careful and somewhat masterful study of the intensely interesting story of the growth of our own federal republic from its colonial beginnings, through the actual founding of our nation by the greatest group of practical statesmen the world has ever seen; see Uncle Sam introduced to the family of nations in the War of 1812; and follow the story through nullifications, secession and compromises to its dramatic

culmination in our Civil War, and our final entering gloriously upon the stage of great world powers. Such a course, properly conducted, should give excellent training in the direction of that larger view and generous attitude that we call historic mindedness.

RALPH R. PRICE.

The students of technical colleges are establishing a good record. The Western Electric Company, of Chicago, one of the largest employers of labor in the country, has recently given notice to employés that playing the races and other gambling, smoking cigarettes and drinking whisky must be stopped. Gambling is demoralizing, drinking whisky and the use of cigarettes clouds the intellect and is a menace to their patrons. This company, in speaking of college students says: "Of the one thousand five hundred employés, three hundred are college graduates, and these, Superintendent Mitchell says, are all that can be desired. No college man in our employ has ever caused us any ground for complaint. They are a fine lot of fellows. This spring a representative of the firm took a trip east just before commencement time to engage fifty of this year's graduates." The Illinois Central railway, the Chicago, Burlington & Quincy railroad, Marshall Field & Co., and Farwell & Co., have, within ten days, posted notices of a similar character.

The Burrton *Graphic*, of November 6, publishes the following resolutions, passed by the farmers' institute held there on October 31: *Resolved*, That we heartily endorse the work of the Kansas Experiment Station as being of great practical value to the farmers of the State, and inasmuch as the Station receives no support from the State and has insufficient funds for the proper carrying on of its work, be it further *Resolved*, That we inform our representative to the State legislature that we wish him to vote for an appropriation of $25,000 for carrying on the work of the Experiment Station.

The November meeting of the Manhattan Horticultural Society will be held Thursday, November 19, at 3 P. M., in Horticultural Hall. The program will be illustrated by a chrysanthemum exhibit by Foreman Wm. Baxter and Mr. C. Farman, and a carnation exhibit by H. W. Moore. Everybody is invited.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.....Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Regent McDowell visited College on Saturday, November 7.

Professor Walters will lecture at Bean, Wabaunsee county, on December 4.

The carpenter-shop has received a new twenty-horsepower electric motor.

Miss Maude Failyer assisted in the library while Miss Barnes was absent last week.

The Animal Husbandry Department has commenced winter feeding—alfalfa hay and ensilage.

Doctor Mayo was called to Wallace county last Wednesday to investigate a disease among cattle.

The College football team defeated Fort Riley in a hard game at athletic park last Saturday by a score of 11 to 0.

E. M. Hutto leaves on Wednesday of the present week for Orange, La., where he expects to superintend a lumber mill.

The machine-shops have lately made one hundred fifty water-cock extensions and fifty condenser clamps for the Chemical Department.

Professor Walters went to Marysville last Saturday to deliver an address at the annual meeting of the Swiss-American Society of North Kansas.

A tramp among the trees on the College grounds reveals how poorly the trees bore seed this year. Catalpa seed is in demand, but orders can not be filled.

Miss Barnes, of the Library Department, attended the meeting of the State Library Association at Emporia last week and was elected a member of the executive committee.

The boys in the Horticultural Department are learning to care for and store celery. The crop promises well, and in a short time the department hopes to have on hand a good supply of well-bleached stock.

J. Goodsheller and V. Kubin, two recent graduates of the engineering apprentice class, left last Thursday for Holyoke, Mass., to work for the Dean Steam Company, one of the largest machine-shops in America.

N. L. Towne, of the senior class, was compelled to return home last week to assist his father on the farm. Mr. Towne intends to complete this term's work at home and if possible return to College and finish with his class.

The continued rainy and muddy weather emphasizes the blessings of good roads. The Horticultural Department is trying, among many other things, to get all the campus roads and walks in good shape before winter sets in.

A number of students have taken advantage of the opportunity to send home a box or barrel of apples from the Horticultural Department trees. A worthy and commendable treat to the home folks. The department still has a supply on hand.

President and Mrs. Nichols and son Rae left last Saturday for Washington, D. C., to attend the annual session of the American Association of Agricultural Colleges and Experiment Stations, which meets there on the 17th and 18th inst. The President is chairman of the section on college work.

The machine-shops have lately been pressed into service by the Manhattan Mills and Paddock's Marble Yard to repair machinery. Foreman Wabnitz and some of his special students worked last Thursday till 10 o'clock at night in the marble yard in order to get the steam-engine in shape for Friday

The fine fall weather of the past week has greatly accelerated the stonework of the two new buildings. That of the Auditorium is nearly completed to the level of the galleries, while the Dairy Hall has received its second-floor joists. Another week of such Kansas sky will finish the stonework of the Dairy Hall.

Professor Roberts is making arrangements to build a suburban dwelling on his plot of land which includes several acres at the west end of Poyntz avenue, northeast of "Castle Kimble." It will be modern in every respect and contain eight rooms besides reception hall, bath room, etc. The lower story will be of stone and the second story frame.

The Kansas Academy of Science will meet at this College on Friday and Saturday of Thanksgiving week. The sessions will be held in the College chapel and in Physical Science Hall, and will be open to all who wish to attend. A reception will be tendered the members on Friday evening. The Academy has one hundred fifteen active members. Railroads will sell round-trip tickets to Manhattan at holiday rates.

A. A. Cottrell and wife, of Wabaunsee, will graduate their ninth child in the Agricultural College at Manhattan next spring, and then, as he says, they will be 'out of the brush.' For over forty-three years this fine old couple have lived in our county and the fine family they have reared and educated is certainly an honor and a credit to them, and they should be proud and happy. Nine children graduated from the same college! Isn't that something to be proud of?—*Alma Enterprise.*

Arrangements have been made for the following farmers' institutes: November 26, Valley Falls, Professor McKeever and Miss Rice; November 27 or 28, Jewell (Star church), Miss Minis and Assistant Shoesmith; December 1 and 2, Oak Grange, near Topeka, Professors Dickens and Ten Eyck; December 2, Hutchinson, Professor Erf and Doctor Barnes; December 3 and 4, Hackney, Professor Erf and Doctor Barnes; December 4 and 5, Caldwell, Professor Erf and Doctor Barnes.

The Fifth District Federation of Women's Clubs met at Manhattan during the past week and visited College in a body on Thursday afternoon. There were between eighty and one hundred women present. Prof. Henrietta W. Calvin gave a demonstration lecture on invalid cookery, after which they were shown through the class-rooms and laboratories of the Domestic Science and Sewing Departments. They also visited the greenhouse, the Girls' Gymnasium, and the barns. At 4:30 they assembled in Kedzie Hall for refreshments, served by the junior girls of the domestic science course. All expressed themselves highly pleased and interested with everything they saw.

Assistant Shoesmith has been employing his spare time during the past few weeks calculating yields, tabulating notes and preparing the crop report which the Farm Department hopes to have published as a bulletin, so as to get it in the hands of the farmers at the beginning of the new year. One who has not had the experience and is not familiar with the requirements of experiment work can hardly appreciate the vast amount of labor necessary to prepare a report of this kind, even after the season's work in the field has been completed. The field work, however, represents the greater part of the labor, and the important part so far as the success of the experiment is concerned. All of the work must have been carefully done at the right time and in the right way. Careful observations must have been made and full notes recorded if valuable lessons are to come from the results.

The Farm Department has concluded the taking of root samples for this season. The last sample taken was buffalo grass, from the hills seven miles west of the College. Since Mr. J. M. Scott accepted the position at Mesilla Park, N. M., Mr. H. C. Kyle, acting as assistant in the Farm Department, has had full charge of the details of the root work. Twenty-two different samples have been prepared and studied during the season. These are on exhibition in the hall and class rooms of Agricultural Hall. The samples consist of the following: Four samples of corn, showing distribution of roots between two hills, two samples of Kafir-corn roots, two of cane, two of cow-peas, two of soy-beans, one each of wheat, oats, barley, clover, and alfalfa, and five samples of grass roots, including, orchard-grass, Bromus inermis, Kentucky blue-grass, buffalo-grass, and the native blue-stem. Photographs have been taken of each of these samples, and cuts of these, with a discussion of the subject, will be published in bulletin form soon enough, it is hoped, so that copies may be used at St. Louis, where the samples will be on exhibition.

ALUMNI AND FORMER STUDENTS.

E. W. McCrone, '03, writes from Big Horn, Wyo., where he is in charge of a dairy farm.

Dr. E. C. Joss, '96, of the Bureau of Animal Industry, is now stationed at Troutville, Ore.

A. E. Oman, '00, of the Bureau of Forestry, visited the College recently on his way to the Gulf.

W. T. Swingle, '90, Bureau of Plant Industry, has returned to Washington after a study of the plants in the region about the Mediterranean.

Carl E. Rice, class of '97, writes that his address is now at Parian Station, Manila, P. I. He is now in the employ of the civil service as metropolitan policeman and his principal duty is the guarding of government buildings and other property.

Miss Nellie Hubbell, third-year student in 1900, was married October 24 to Mr. R. D. Bair, of Topeka, Kan. Mr. Bair has a position as industrial teacher in the Indian school at Darlington, Okla. Mrs. Bair is matron of the boys in the same school.

W. C. Lee, student in the '80s, and private secretary to the President 1897 to 1899, sends a "how do you do" from the office of grass and forage plant investigations, United States Department of Agriculture, where he is employed as stenographer.

F. L. Schneider ['02] arrived from Albuquerque, N. M., last Friday, where he owns a half interest in a large hotel. He will start back this evening, accompanied by his wife, who has been staying with her mother, Mrs. McCreary, of this city.—*Mercury.*

Dr. C. S. Evans, '96, writes from Minaca, Chihuahua, Mexico, that he has just dropped into the old city of Maguarichic, which is said to have mines nearly five hundred years old. They are reached by trails which are narrow and precipitous and wind through the finest scenery the doctor ever saw. He seems to be interested in mines there and promises to write again.

Miss Harriet G. Nichols, '98, stole a march on her friends last week and was married on Wednesday, November 11, to Mr. R. P. Donahoo, at the home of Mrs. B. F. Sweet. The groom arrived on the 11 o'clock train, but owing to some delay the ceremony was not performed at the hour set, and during this time some twenty of their friends "happened in." Miss Florence Sweet played softly on the piano while Reverend Hood pronounced the solemn words which made them one. The happy couple were escorted to the east-bound Rock Island by a merry company, who showered rice and good wishes upon them as they bade us adieu. Mr. and Mrs. Donahoo went immediately to Tucumcari, N. M., where Mr. Donahoo is located. May their united life be as beautiful as their wedding day, and prosperity attend their way.

Historical Society

VOL. 30 NO. 10

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - *PRES. E. R. NICHOLS*
Local Editor, - - *PROF. J. D. WALTERS*
Alumni Editor, - *PROF. J. T. WILLARD*

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.) ..... Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.) ..... Secretary

JACOB LUND, M.S. (K.S.A.C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K.S.A.C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.) ..... Assistant in Music
William Anderson, B.S. (K.S.A.C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Ernest C. Gasser ..... Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K.S.A.C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K.S.A.C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.) ..... Bookkeeper
Miss Matilda Doll ..... Clerk in Post-office
Miss Mamie Alexander, B.S. (K.S.A.C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., NOVEMBER 24, 1903. NO. 10

THE INCANDESCENT LAMP.

IT WAS more than fifty years ago that the first electric lamp was constructed embodying, essentially, the same principles as are involved in the modern incandescent lamp. This early type consisted of a thin carbon rod enclosed in a glass receptacle, from which as much air as possible had been removed. It was not a commercial success, because of the difficulty in making the proper carbon conductor and in providing the necessary vacuum.

In 1879 letters patent were granted to Thos. A. Edison for a device described as "a lamp in which light is produced by the passage through a solid conductor of a current strong enough to raise it to a temperature of incandescence." The first solid conductors, used under this patent, were platinum wires. This material, however, did not prove satisfactory for the conditions to which the commercial lamps are ordinarily subjected, viz., variation of voltage. When the voltage rises considerably above the normal rating, the platinum is likely to be melted or very much weakened in consequence of the rapid rise of heat with the voltage. The cost of platinum is also a serious objection to its use for this purpose.

About the year 1880, a number of inventors turned their attention to the production of a carbon filament which should be an improvement over that employed in the early type. Several inventors, notably Edison, Sawyer & Man, and Swan, recommended and used in their lamps carbonized threads of various substances, those most extensively used being bamboo, cotton, and silk. To prepare these threads for the lamps, they were first carbonized, *i. e.*, converted into carbon by baking for several hours at a high temperature in a crucible packed with powdered carbon. After this process they are found not to be of uniform resistance throughout their length, and are heated by passing a current of electricity through them while immersed in a bath of

naptha gas or petroleum. The heat decomposes the surrounding hydrocarbon and carbon is deposited upon the filament in graphitic form. The deposit occurs over every part of the filament, but not uniformly, more being deposited where the cross-section is least, for the resistance at such points is greater and the temperature consequently higher. This "flashing process," as it is called, is continued until the cross-section is quite uniform throughout, and until a certain resistance is obtained, depending upon the potential of the circuit on which the lamp is to be used. The resistance is determined while the filament is incandescent, by measuring the current flowing through it and the drop over its terminals. The drop ÷ current gives resistance in ohms. The hot resistance of a 16 candle-power lamp for 110 volts is about 200 ohms. This gives such a lamp, when on normal voltage, a current of about one-half ampere, or a power consumption of 56 watts. This would be rated as a 3.5-watt lamp, *i. e.*, 3.5 watts of power are required for each candle-power. A sixteen candle-power 220 volt lamp also consumes about the same wattage per candle-power as the 110 volt lamp. This is secured by doubling the resistance for the higher voltage. In so far as it is possible to formulate a law for length and diameter with reference to voltage and candle-power, the length is proportional to the voltage and the surface to the candle-power.

Within the last few years a new filament has come into general use. It is called the "squirted" filament, and is made by dissolving absorbent cotton in a solution of zinc chloride. The fibrous character of the cotton disappears and a gelatinous mass is produced. This substance is forced through holes of the proper size and caught in vessels containing alcohol. This hardens the substance and permits the threads to be wound upon large cylinders and dried. When dry they are quite strong and are then cut into the proper lengths and subjected to the "flashing" process already described. It is claimed that this filament has a more uniform consistency and can more easily be made of any diameter desired. There is, however, considerable difficulty in "squirting" to eliminate bubbles of air, which are apt to become entangled in the mass of the filament and greatly weaken it at such points. The filaments are most carefully assorted and the diameters measured with a micrometer before they are mounted.

Mechanical and electrical contact is made between the carbon

filament and the "leading in" wires in several ways. One method is to electroplate a sleeve of copper about the junction. This gives the joint considerable strength and excellent electrical contact. A more generally adopted plan is to cement the junction. The cement used is a mixture of carbon and molasses. This method is less elaborate, more rapid, and gives good results. It will be noticed that at the base or socket end of each lamp there is a short glass tube within the bulb. Through this tube the "leading in" wires may be seen. The portion that is sealed into the glass is platinum wire, the rest, copper. Platinum is used for this purpose because it has about the same expansion coefficient as glass and because it does not melt when sealed in. The small amount of platinum so used increases the cost of lamps considerably. Alloys less expensive than platinum have been suggested and tried, but alloys that have the proper expansion coefficient will not stand the high temperature of "sealing in." The lamp bulb is blown on the end of a glass tube of suitable size, the base being left open. Into the open base is sealed the short glass tube bearing the "leading in" wires, to which the filament has been cemented.

When the base of the lamp has then been filled with plaster and the brass parts electrically connected to the filament, the air is very perfectly removed from the bulb by means of a mercury pump. When bubbles of air no longer appear in the tube of the pump it is evidence that no more air can be removed under the circumstances. The bulb is then heated to remove the considerable quantity that adheres to the glass. When all the air possible has been removed, the small glass tube connecting the mercury pump with the bulb is sealed with a blow-pipe and the lamp is ready for use.

It is quite necessary to maintain a high vacuum in the bulb in order to insure noncombustion of the filaments, to lessen the escape of heat from the filament to the bulb, and to prevent what is called "air-washing." The heat escapes from the filament in two principal ways—radiation and by conduction through the leading-in wires. The heat thus escaping under the best conditions of vacuum and non-conduction is undesirable and may without precaution give trouble, as the following cases cited in the last report, October 10, 1903, of The National Board of Fire Underwriters will show. Nine fires are reported due to heat from incandescent

lamps in contact with inflammable material. In one case a $3000 fire, water damage, was started by a lamp left in contact with a drygoods box. It burned a hole through two three-fourth inch boards and ignited the contents of the box. In another case an incandescent lamp set fire to blankets in a small closet. The housekeeper had been working in the closet and left the lamp lighted and in contact with the blankets. It is, however, only when the heat from the bulb is not permitted to escape, as in the preceding cases, that there is any danger of fire. The temperature of the filament has been estimated by H. J. Weber to be 1591° C. for 3.1 watts, and 1560° C. for four watts per candle-power.

A matter of considerable interest to both producer and consumer is that of the life and efficiency of the commercial incandescent lamp. The life of a lamp, as well as its candle-power, is a function of the voltage. So sensitive is the filament to voltage variation that a comparatively slight variation from the normal will greatly change both the candle-power and life. The following table, compiled by F. B. Crocker, shows for a considerable range the candle-power, efficiency and life as a result of variation of voltage:

Per cent of normal voltage.	Per cent of normal candle-power.	Relative life of 3.5 watt lamp.	Efficiency in watts per candle-power. (3.5 watt lamps.)
90	53	.....	5.36
91	57	.....	5.09
92	61	.....	4.85
93	65	.....	4.63
94	69.5	3.94	4.44
95	74	3.10	4.26
96	79	2.47	4.09
97	84	1.95	3.93
98	89	1.53	3.78
99	94.5	1.26	3.64
100	100	1.00	3.50
101	106	.84	3.88
102	112	68	3.27
103	118	.58	3.16
104	124	.47	3.05
105	130	.39	2.95
106	137	.31	2.85

The above table is based upon lamps consuming 3.5 watts per candle-power, and applies to the ordinary commercial lamp.

It may be seen from the above compilation that when the voltage is 4 per cent above normal a 16 candle-power lamp will give 124 per cent of 16 candle-power, or 19.8. The life, however, is reduced to less than one-half what it would be at the proper voltage. There is on the other hand a gain in efficiency, but not enough to

offset the reduction in the life of the lamp. After a lamp gives less than 80 per cent of its rated candle-power it is not economical to continue its use unless the consumer wishes to pay for 16 candle-power and get 12.8 candle-power or less. There is great negligence in this regard. Lamps are frequently kept in service long after the economical point is reached, usually until the filament burns out. The blackening of the bulbs by a deposit of carbon from the filament is a principal cause of reduced candle-power.

This is caused by the following phenomena: First, a projection of particles of carbon from the filament, "Crookes effect," greatly facilitated by the high vacuum, and second, by the removal of particles from the filament by air washing. This, of course, being increased by a low vacuum. The introduction of a small quantity of gas inert to carbon has been attempted as a remedy for the "Crookes effect" without success. Even a small quantity of gas about the filament increases the wearing due to attrition and conveys by convection too much heat from the filament, and thereby reducing the efficiency of the lamp.

The average useful life of a lamp is about eight hundred hours, when operated under normal conditions. The cost of the energy for a 16 candle-power, 56 watt lamp, during this time at 15 cents per kilowatt hour is $6.72. Assuming the cost of the lamp to be 25 cents, it will be observed that the cost of lamp renewal at the end of the useful life period is less than four per cent of the total cost of the energy consumed. Lamps may run as long as fifteen hundred hours before burning out, but it would be poor economy to use them so, for during the latter part of this period they may not give but sixty per cent of initial candle-power, while the increased cost per candle-power is at least sixty per cent.

Before the year 1900, all forms of electric lamps employed carbon as the light-emitting substance. Since that time other forms have been developed, prominent among these being the mercury arc, the Nernst lamp, and the magnetite arc.

The Nernst lamp was invented by Professor Nernst, of Göttingen. In this lamp the carbon filament is replaced by a short composition strip made up of a mixture of magnesia, yttria, zirconia, and thoria. The composition strip is not consumed by exposure to air when incandescent, and hence is not enclosed in a vacuum.

The mercury arc is a development of the old idea of vacuum

tubes as sources of light. Hauksbee, two hundred years ago, used such tubes containing rarefied gases and made them luminous by frictional electricity. Mr. Cooper Hewitt devised a vacuum tube lamp of 300 candle-power with an efficiency, he claims, of one-fourth watt per candle-power. Long life and high efficiency are the chief advantages of this form of lamp. The mercury arc is in process of development for commercial purposes. A few have been installed for street lighting in Schenectady, N. Y.

The magnetite lamp, a recent type of arc lamp, employs copper as the positive and magnetite as the negative electrode. Mr. C. P. Steinmetz is the originator of this type. A few of these have also been placed on the streets of Schenectady, where they compare most favorably with the carbon arcs in intensity and color of light, at a less cost per candle-power than the carbon arcs. Every effort is being made by manufacturers to produce an electric lamp that will give greater efficiency and durability than any of the present devices afford.

B. F. EYER.

THE COLLEGE LIBRARY.

THOMAS CARLYLE says, "The true university of these days is a collection of books, and all education is to teach us how to read."

The library is the great storehouse of thought, the great workshop of the college. Too much stress cannot be put on its value to the student in his college work. The laboratory is valuable for the original investigation and experimentation that may be carried on, but, after all, one has to know the theories and researches of the past and work up to them before new discoveries can be made. And we will find that all discoveries, inventions and deeds of importance have been recorded on the pages of books. Text-books give much knowledge, but no one text-book contains all there is to be said on any one subject. And every day, in almost every subject, collateral research in the various authorities in the library would add much to the general knowledge of the student.

Helps in the Use of the Library.—(1) Card catalogues, of which the library has five, viz.: Author, title, subject, shelf-list, and experiment station. The first three of these are arranged alphabetically; the author, according to the author; the title, according to the title on the back of the book; and the subject, according to the subjects or contents of the books. The shelf-list is of importance

chiefly to the librarian, and in it the arrangement of the cards corresponds to the arrangement of the books on the shelves. The experiment station catalogue consists of a card index to agricultural literature, including not only the publications issued by the United States Department of Agriculture and its various departments, but also to the reports and bulletins issued by the various states and experiment stations. (2) Printed catalogues. Besides the card catalogue the library has a complete set of *Poole's Index*, also the *Cumulative Index*, printed catalogues of current literature. *Poole's Index* is issued as an annual, and at the end of four or five years is compiled into one large volume. The *Cumulative Index* is issued as a monthly periodical, and at the end of the year is compiled into an annual. The *Engineering Index* is also a monthly publication, which is compiled into a single volume each three or four years. In this index may be found references to all engineering material. The Government printing office publishes a printed dictionary catalogue of the public documents, which is kept on file in the library.

Classification.—In a library which is as large as the College library, and offers the advantage of open book stacks to its patrons, it is necessary, in fact, very essential, that every one should understand its classification in order to find the material wanted in the quickest and best way. The books are classified according to the Dewey classification system, which means, in brief that all knowledge is classified under nine heads, numbered by the digits 1 to 9. Thus we have nine separate libraries, namely, philosophy (100), religion (200), sociology (300), philology (400), natural science (500), useful arts (600), fine arts (700), literature (800) and history (900). Each class may be separated into nine divisions, each division into nine sections, and the process repeated as often as necessary. Encyclopaedias, periodicals, etc., too general in character to be classified under any one of these heads, are marked nought, and form a tenth class. Thus we have in our outline, general works (000).

Now, neither all encyclopaedias nor all periodicals are put under the head of general works; only those very general or universal in character are classed in this place. There is a place in each library (meaning of the term the same as used above) for general works on each subject. General encyclopaedias are classed 030, but an encyclopaedia of useful arts would be classed 603; of

medicine, 610.3; of agriculture, 630.3; of literature, 803; while for American literature, 810.3. General periodicals are classed 050, but general scientific periodicals are classed 505; physical journals, 530.5; electrical journals, 537.05; engineering journals, 620.5; etc, etc. It will be found that 3 preceded by 0 always indicates an encyclopaedia, and 5 preceded by 0 always indicates a periodical. This leads me to make a farther remark on what Mr. Dewey calls "form distinction." There is a system in his use of numbers, and a whole number or decimal used with a certain number has a corresponding meaning used with any other number. Thus, the following preceded by 0 mean: 1, philosophy, theories, etc.; 2, compends, outlines; 3, dictionaries, cyclopedias; 4, essays, lectures, etc ; 5, periodicals, magazines; 6, societies, associations, etc.; 7, education, etc.; 8, polygraphy, collections, etc.; 9, history.

One other uniformity that I wish to call attention to may be illustrated by the class literature (800). 800 is literature in general; 810, American; 820, English; 830, German; 840, French, etc. Now, literature has the following form distinctions: 1, poetry; 2, drama; 3, fiction; 4, essays; 5, oratory; 6, letters; 7, satire and humor; 8, miscellany, etc.; 811, American poetry; 821, English poetry; 831, German poetry, etc ; 812, American drama; 822, English drama; 832, German drama, etc.; 813, American fiction; 823, English fiction; 833, German fiction, etc.; 814, American essays; 824, English essays; 834, German essays, etc.

This system is very simple and easy to understand, though at first it may seem very complex, and its mastery throws open to the user the location of the 28,000 volumes in the library.

MARGARET J MINIS.

The short courses in agriculture and dairying are open to all "young men" between the ages of eighteen and eighty. The older young men have not patronized these courses as much as they should. It will pay any wide-awake farmer, who has not had the opportunity of attending an agricultural college or of taking studies in agriculture, provided he can get away from his home and business, to come to Manhattan and take the Farmers' Short Course or the Dairy Short Course, beginning January 5, 1904. Ask any farmer who has taken the short course in agriculture at this College whether he was repaid for the outlay of time and money, mark his answer, and you will surely come and take the course if you can possibly do so.

ACADEMY OF SCIENCE PROGRAM.

The thirty-sixth annual meeting of the Kansas Academy of Science will be held in lecture-room 26 of Physical Science Hall at this College, commencing Thursday, November 26, at 8 P. M. On Friday night J. C. Cooper, of Topeka, retiring president of the academy, will deliver an address, his subject being "Oxygen in its Relation to Mineralogy," after which there will be a reception.

There are fourteen applications for membership in the academy to be considered at the approaching meeting, which promises to be one of the most successful since its organization. Following is the program in full:

PRESIDENTIAL ADDRESS.

Oxygen in its Relation to Mineralogy . . . . . J. C. Cooper

CHEMICAL PAPERS.

The Salt Industry in Kansas . . . . . E. H. S. Bailey
Kansas Petroleum (second paper) . . . . . Edward Bartow
The Action of Ethyl Chlorsulphonate upon Aniline . . . . . F. W. Bushong
Analysis of Salt Water from the Atchison Coal Mine . . . . . E. B. Knerr
Some Mineral Waters of the Indian Territory . . . . . R. S. Sherwin
Native Zinc. . . . . J. T. Willard
Progress in the Production of High-protein Corn . . . . . J. T. Willard and R. H. Shaw
On the Action of Hydrogen Chloride on Certain Hydrous Chlorides . . . . . F. M. McClenahan

GEOLOGICAL PAPERS.

Well Borings at Wamego and Smoky Hill . . . . . J. T. Lovewell
Atchison Coal Mines . . . . . E. B. Knerr
The Great Flood of 1903 in Central Kansas . . . . . Alfred W. Jones
Geological Effects of the Kansas River Flood of 1903 . . Erasmus Haworth
Protostega Gigas, and Other Cretaceous Reptiles and Fishes of the Kansas Chalk . . . . . Charles H. Sternberg
The Fauna of the Mentor . . . . . Alfred W. Jones
Some Miscellaneous Notes on the Geology of Kansas . . . . L. C. Wooster

MISCELLANEOUS PAPERS.

The Preparation of Lithological Slides . . . . . Alva J. Smith
Notes on the Archaeology of Butler County . . . . . J. R. Mead
Sanitary Science . . . . . J. M. McWharf, M.D.
Harmonic Cubes and other Solid Forms . . . . . B. B. Smyth
Recent Advances in Astronomy . . . . . W. F. Hoyt
Observation on Mirages . . . . . B. B. Smyth
A Review of the Weather During the Crop Season of 1903 . . T. B. Jennings
What Rights Have Educational Institutions for Duty-free Importations . . . . . E. H. S. Bailey

BIOLOGICAL PAPERS.

Notes for 1903 on the Birds of Kansas . . . . . F. H. Snow
Observations on Microscopic Plants and Animals . . Lumina Cotton Riddle
The Buprestidæ and Scarabeidæ of Kansas . . . . . Warren Knaus

Medicinal and Commercial Value of Kansas Plants . . . . . L. E. Sayre
Notes on the Culture of Wild Flowers . . . . . H. W. Baker
July 1 Flora of Grayback, Colo., Elevation 10,000 Feet . . . H. J. Harnley
The Results of an Entomological Collecting Expedition to the Arizona Desert . . . . . F. H. Snow
The Coleoptera of the Sacramento Mountains of New Mexico, II . . . . . Warren Knaus
Life-history of *Microbembex monodonta* . . . . . Lumina Cotton Riddle
Bibliography of Loco Weed. . . . . L. E. Sayre
The Results of an Entomological Collecting Expedition to Clark County, Kansas . . . . . F. H. Snow
Additions to the List of Kansas Coleoptera for 1903 . . . . . Warren Knaus
Notes on Fascination . . . . . Lumina Cotton Riddle
Notes on Collecting Cicindelidæ . . . . . D. E. Lantz
Notes on Collecting Cicindelidæ . . . . . Eugene Smyth
Preliminary List of Kansas Spiders . . . . . Theodore H. Scheffer
Notes on the Mound-building Prairie Ant (*Pogonomyrmex occidentalis*) . . . . . George A. Dean
Two New Diseases of Economic Plants . . . . . Leslie F. Paull
The Cocooning Habits of Spiders . . . . . Theodore H. Scheffer

The meetings will be open for all who wish to attend.

The following item from the associated press will interest many of the old students and instructors of the College: "T. B. Gerow, director of the state employment bureau, has just received a letter from Dr. Philip Krohn, who fifteen or twenty years ago was one of the most noted preachers and orators of the State of Kansas. He is now living in Candor, Tioga county, New York, an old man on the verge of the grave. In his own words, he is 'a poor, old paralytic, wrecked—physically ruined.' Doctor Krohn in his day filled Methodist pulpits at Atchison and at Abilene. He was accounted one of the most powerful preachers in the West in his day, and was also active in politics. Governor Glick made him a Regent of the State Agricultural College, and Governor Martin made him chairman of the State Board of Charities."

About six hundred students of the Nebraska University accompanied their football team to Lawrence last Saturday, where the corn-huskers played the Kansas University team, defeating the latter in a hard contested game by the decisive score of 6 to 0. The excursion train which carried them tarried in Manhattan about an hour, and the university band, followed by a large concourse of Nebraska students, paraded our streets to the tune of "Hot Time."—*Mercury.*

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99]..... Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The two silos near the dairy stable are receiving a coat of paint.

Harry Heim, third-year student, of Lincoln, Kan., was very ill with pneumonia last week. His mother was sent for, and arrived Monday.

Prof. W. A. McKeever will deliver an address before the Southwestern Kansas Teachers' Association, which will be held at Garden City during Thanksgiving holidays.

The Chemical Department has recently received five hundred dollars' worth of chemicals and apparatus as part of the year's supply, for the most part imported from Germany.

The first-year class, numbering at present over five hundred students, had a class party in the Gymnasium on November 16. The freshmen always have a good time at such a gathering.

The Hamilton Literary Society held their weekly session last Saturday in the College chapel, for the purpose of giving a short theatrical to their members and a number of invited friends. The program was well carried out and interesting.

On account of the meeting of the Kansas Academy of Science on Friday and Saturday, the class work of the present week was advanced one day: that is, the classes met on Monday, Tuesday, and Wednesday, while Friday and Saturday became a vacation.

President Nichols, who attended the annual meeting of the American Agricultural Colleges and Experiment Stations, held at Washington, D. C., on November 17 and 18, is expected home today. During his absence the executive chair was held down by the senior professor.

The Alpha Beta Literary Society will render a play in the Manhattan opera-house on November 30. It will take the place of an open session and will be given to invited friends only. There will be no admission charges. The Alpha Beta society has always done well on such occasions, and we promise a treat to all who may attend.

The Farm Department has commenced to haul manure. It is good practice to haul out the manure during the winter and spread it upon the corn land or upon grass or alfalfa land. A light dressing of manure on grass lands not only acts as a fertilizer but serves to conserve the soil moisture by the mulch it gives the soil.

A correspondent of the *Mercury* has the following to say about the visit to this College of the Fifth District Federation of Women's Clubs: "Through the courtesy of the Commercial Club, a drive to the College was arranged for. Barring a gale of wind and rough roads, the ride was very pleasant. The members of the Commercial Club, who were expected to escort the ladies, were made conspicuous by their absence, much to the regret of the ladies, of course. The domestic science building was first visited; here Mrs. Calvin, professor of domestic science, gave a demonstration of food for invalids. The menu consisted of toast with meat pellets, beef tea, cocoa, prepared orange and lemon custard (that isn't the scientific name, however). As these intellectual women paid marked attention to every word of the demonstration, I have no doubt there will be a noticeable improvement in foods prepared for invalids hereafter, if not a diminution of invalids from now on. All enjoyed the demonstration, albeit a few cherished idols were brushed aside by the professor just as we had begun to worship them, such as the 'whitest flour containing more nutrition than the whole wheat flour, germ and all,' which we had learned to love so well, and 'the nutrition of beef after the juices had been extracted was not impaired.' I gave my consciousness a kick for being fooled all these years, and joined the ladies who were directed by President Nichols on a tour of inspection of the stock, the stables and the barns, the dairy building, the library and museum, the foundry, 'smithy,' and carpenter-shop, finding intelligence, interest and application in every department. The most attractive, perhaps, was the last, the girls' gymnasium, where basket-ball and other feats of athletic skill were witnessed and enjoyed. Following this all were invited to Kedzie Hall, where the domestic science students, under direction of Mrs. Calvin, served a delicious lunch of creamed chicken, coffee, lettuce sandwich and cake. All were loud in their praises of this department, of President Nichols and his estimable wife for their kindly efforts to have all take home a good picture of the College."

FARM NOTES.

Soil fertility means soil productivity, or the power which the soil has of producing crops, and it depends upon the store of plant food in the soil, its maintenance and availability.

In a sense, "tillage is manure." The soil contains a large store of plant food which is not in the available form and cannot be used by the crop. But by the process of weathering and decay, and through the action of bacteria, the locked-up plant food becomes available and thorough tillage gives the most favorable conditions for hastening this development.

If you have plenty of land upon which manure may be spread and a limited supply of manure, more value will be received by spreading it thinly over a large area. By this method all the fertilizing elements will be utilized and no injury is likely to result to the crop, as sometimes occurs from too heavy manuring, which causes crops to burn out during a dry season.

The three important factors in crop production are feed, breed, and care or cultivation. Of these the feeding of the crop, or the fertility of the soil, stands first in importance.

The time to maintain the fertility of the soil is while the soil is still fertile. When the soil fertility has become exhausted, it can only be restored with much expense of time, money, and labor, and meanwhile poor crops are the result.

ALUMNI AND FORMER STUDENTS.

Mr. and Mrs. T. W. Morse ['95 and '94] are the proud parents of a little daughter, born Saturday, November 14.—*Mercury.*

Leslie A. Fitz, '02, visited over Sunday on the way from his station at McPherson to take up his winter duties in the Bureau of Plant Industry, at Washington, D. C.

Fred Jolly ['95] and wife had a narrow escape when the large Grange store burned at Olathe recently. They were in the opera-house in the second story of the building when the alarm was given and before they escaped, the smoke was almost suffocating. —*Nationalist.*

H. C. Rushmore, '79, visited the College last week. He is much interested in the memorial proposed to be placed in the College chapel, and has some ideas on the subject concerning which more may be given later.

At the recent meeting of the Fifth District Federation of Women's Clubs, in Manhattan, as might be expected, graduates and former students of the College had some prominence. The president of the Federation was Emma Knostman-Huse, '80. Allie Peckham-Cordry, '82, was present, and the following from Manhattan appeared on the program during the session: Edith Huntress, '01; Mayme Houghton-Brock, '91; Phoebe Haines, '83; Adella Blachly, '01; Cora Ewalt-Brown, '98; Lulu O'Daniel, Nell Harper-Cooper, Anna Hostrup, and probably others.

Adella Blachly, '01, and Ella Criss, of the senior class, left for Chicago last week to give demonstrations in cooking with the Equal Suffrage Convention. That their mission is attracting some attention is shown by the following from the Chicago *Record-Herald:* "Suffragists Excel as Cooks.—Kansas Women Invade Chicago to Prove Ability in Kitchen Work.—That a desire for suffrage does not interfere with excellence in the art of cookery is to be proved to Chicago skeptics, if such there be, by the 'suffrage women' from Kansas, who yesterday continued preparations for their exhibition of Kansas products, which will open to-day at the Great Northern Hotel. 'We will make pies that will surprise the housewives of Chicago and our baked beans will make Boston shrink into insignificance,' was the slogan of Miss L. Adella Blachly yesterday, as she threw open a large box containing materials for the preparation of these delicacies."

KANSAS STATE AGRICULTURAL COLLEGE

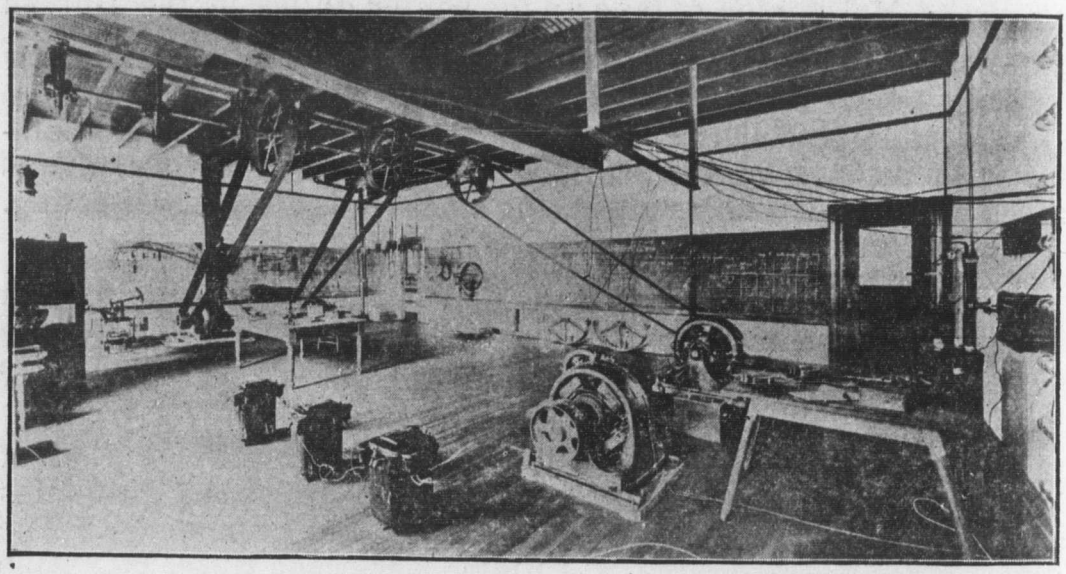
FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

1—Agriculture
2—Domestic Science
3—Mechanical Engineering
4—Electrical Engineering
5—General Science

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



Electrical Engineering Laboratory.

COLLEGE CLASSES are open to both sexes. Tuition is free. An incidental fee of $3 per term is charged all students from Kansas. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between $100 and $200. All College laboratories and class rooms are well supplied with needful apparatus and appliances. A preparatory department is maintained for persons over eighteen who cannot pass the common-school branches.

All Common School Branches

Are taught each term, and nearly all of the first- and second-year subjects; so that it is possible for one to get nearly all subjects of the first two years by attendance during winter terms only.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

1—Apprentice
2—Domestic Science
3—Dairying
4—Agricultural

For catalogue or other information, address

ERNEST R. NICHOLS, A. M., PRES.

Winter term begins January 5, 1904.

MANHATTAN, KANSAS.

Historical Society

VOL. 30 NO. 11

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK. Ph.M. (Cornell College) ..... rofessor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.), ... Professor of Horticulture, Supt. of Grounds
CLARK M BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN. (I. T. U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.) ..... Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.) ..... Secretary

JACOB LUND, M.S. (K.S.A.C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

Miss Ada Rice, B.S. (K.S.A.C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.) ..... Assistant in Music
William Anderson, B.S. (K.S.A.C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Ernest C. Gasser ..... Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans. (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Ella Weeks A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K.S.A.C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Miss C Jeanette [illegible] B.S. (K.S.A.C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.) ..... Bookkeeper
Miss Matilda Doll ..... Clerk in Post-office
Miss Mamie Alexander, B.S. (K.S.A.C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.) ..... Clerk in Botanical Department
Charles [illegible] ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., DECEMBER 8, 1903. NO. 11

ENGLISH IN THE COUNTRY SCHOOL.

AS YOU read my title I hear some one exclaim, "Hobby! riding a hobby!" Yes, if you please; but the experiences of many a "mid-term" and "final" test in English, together with those of every day in the class room, afford sufficient cause for the development of "hobbies." However, the question is worthy of careful consideration.

We are fond of boasting that we are living in an age of progress; that we enjoy superior advantages to those of our fathers; that our public school system is the safeguard of our country — all of which is, to a certain extent, true. It was probably with something of this feeling in mind that certain newspapers have recently been suggesting that the State does so well for its youth in giving them the common school, that it ought not to be called upon to provide schools for higher education. But when we see the extent of training received in the average country school, we think it well to stop our boasting long enough to investigate the facts.

The college student from the farm is, as a rule, sturdy, earn est, conscientious, persevering, fitted to master the work of the curriculum, if it were not for the fact that he is hampered by lack of preparation. On his entrance to college, it is true, he may know much of arithmetic, but he soon becomes aware of the fact that he knows little of English. How many times have I heard this confession: "I am having so much trouble with my English. I did not take interest enough in it in our country school to study it there, so now it is hard for me. If I had it to do over again, I would give it more attention." This is not an imaginary case, but only one of many similar confessions of students who are working under difficulties — reaping the results of careless preparation.

The causes of this condition are obvious. In the first place the

country school-teacher knows little about the subject herself; she is young, inexperienced, not capable of presenting the subject in an interesting manner. Consequently the pupil spends his time on a subject with which he is more familiar. Again, public sentiment seems to be that the study of language is of secondary importance in the common-school course, and the pupil, feeling that this is the sentiment of his parents and neighbors, soon learns to treat the matter with indifference.

And what is the result? When he attempts to read aloud a selection from a standard author, he cannot read with expression, for he can neither pronounce nor understand the words, hence he cannot interpret the thought of the author. When called upon to express himself in writing, he cannot form a good English sentence, for he knows little of its real value, or of the proper relation of the ideas. His style is wordy and often his spelling is sadly at fault. Even his much-loved algebra gives him trouble because he does not understand the construction of the sentence by which the problem is stated, taking it to mean one thing when it really means another. No wonder that he becomes discouraged and regrets his neglected English.

Of course, we do not expect that the country school shall turn out a finished scholar, but we think we have a right to expect that he shall be able to read well, not only orally but mentally; *i.e.*, that he interpret the printed page, and that he have a proper conception of the English sentence.

But he is a poor critic that does not suggest a remedy. Hence it may be well to consider some ways and means of correcting the causes of these ill effects. In the first place, the study of language must be presented in an interesting and instructive manner. There are methods innumerable and various. Allow me to suggest the following. The teacher should begin with the "ten-year-olds" or younger, interest them in collecting synonyms—words that mean nearly the same thing. Gradually lead them to use these words correctly. Have them tell stories, using certain groups of words, and keep up the practice, varying it sufficiently to maintain interest. Have word contests among the older pupils, carrying it farther, of course, and in every case drilling on variety and accuracy of expression. Make the graceful and intelligent handling of the sentence one of the high ideals for the pupils, and remember to drill, drill, drill. Train the ear of the

pupil to be as sensitive to discords in speech as is the musician's to discords in music.

Another excellent aid toward inculcating a love of good English is by placing in the hands of the youth good literature—literature that is adapted to his age and mental development. If he is given the right book at the right time he will become interested in books and reading, will learn to appreciate and quickly comprehend what he reads, and will soon be able to distinguish between excellent and faulty expression. Hence he will gradually improve his own manner of expression, besides deriving numerous other benefits in the way of broadened intelligence, increased vocabulary, and developed self-confidence.

To be more specific as to what is the "right book at the right time," take the following for example. The child of five years who has heard and learned, has told and retold the "Mother Goose Stories" and the wonder stories of the Bible, is ready at six and seven for Baldwin's "Stories of the Golden Age" and "Alice's Adventures in Wonderland;" from seven to eight he should read, or have read to him, "Christmas all the Year Round," by Howells, "Birds and Bees," by Burroughs, and "Black Beauty." From eight to nine he will become absorbed in "Robinson Crusoe" and Hans Anderson's "Fairy Stories." From nine to ten he will begin to outgrow the realm of fairyland and be glad to know of what other little folk in his own and other lands do, and so he will read "Boys of '76," "Stories of Colonial Children," and Johonnot's "Neighbors in Feathers and Fur." At eleven he will delight in the fun and frolics of "Little Men," Mark Twain's "Prince and Pauper," and Hawthorne's "Wonder Book," while at twelve he will glory in the conquests of Christian, as he fights the lions and giants in Bunyan's "Pilgrim's Progress," and will no doubt follow the fortunes of "The Hoosier Schoolmaster," or delight in the humor of "My Double and how he Undid Me," by E. E. Hale. At thirteen years of age the list of the "right books" begins to increase, but at this time he must not fail to read "Tom Brown at Rugby," "The Last of the Mohicans," and "A Man Without a Country." From fourteen to fifteen he will delight in the fine humor of Irving's "Sketch Book" or of the "Autocrat at the Breakfast Table," by Holmes. At sixteen he should read Dickens' "David Copperfield," "Pickwick Papers," Emerson's essay on "Manners," Scott's "Ivanhoe," and the inspiring biog-

raphies of Washington, Lincoln, Franklin, Grant, and others. In the meantime he will have committed to memory the best patriotic poems of Lowell, Whittier, and Longfellow, and by the time he enters college he will be able to appreciate and master the English classics in his course.

But the teacher alone can do little toward providing suitable books for the pupils. She must have the concurrence of parents and school board. Boys and girls have the habit of the home life in speaking, thinking and in taste for reading so fastened upon them that the best of teachers will have difficulty in overcoming those habits, if they prove to be faulty. The school board has the duty of providing a suitable school library fixed by law, and a library tax law has been on our statute books for more than twenty years, so there is no possible excuse for no books in the country school library. And now, notwithstanding the apparent critical attitude of this paper, the writer cannot resist being optimistic. There is hope for the future. The recently added requirements in English for the county certificates will give us better equipped teachers; in time public sentiment in regard to the matter *must* inevitably change, and hence the two main causes will be removed. May the time speedily come when occasion for regret and deep humiliation on the part of the country school graduate because of deficiency shall be a thing of the past and and when young America shall glory in the skillful use of his mother tongue.

ADA RICE.

CHEAP MAGAZINES.

IN THE last few years the growth of the magazine has been one of the characteristics of the time. The old and well-established periodicals seem to be increasing in value and popularity, and one is constantly hearing of magazines the existence of which was before unknown. One phase of this magazine growth is the multiplication and popularity of good cheap magazines. The *Cosmopolitan* was one of the first of this kind in the field, its aim being to offer a first-class magazine at a moderate price, trusting to advertisements and a wide circulation to make it profitable. Now *McClure's*, *Munsey's*, *Everybody's* and *Ainslee's* are recognized as having a place among standard magazines.

Such magazines as those named have among their contributors some of the foremost writers of the day, as well as others of less

fame but real worth, so that they really furnish good literature to their readers. They endeavor to foster an appreciation of art by the reproduction of pictures by noted artists, and also by securing the work of good illustrators. The various articles of general interest, which cannot, perhaps, in any magazine be classed as real literature, are valuable here as elsewhere as being instructive or entertaining.

In their mechanical make-up, the cheap magazines are deserving of credit and compare favorably with the old high-priced magazines in size and appearance. They also compare favorably with these in the quality of their contents, as before indicated, and yet after all one feels a difference between them, without being able to tell exactly what it is. Perhaps it is partly a difference of regard one feels for the old and the new. An article may be good and be in the cheap, new magazines—it is good if it is in the old standard ones.

But the cheap magazines have a wide field of usefulness. Their province is similar to that of cheap books. The best literature in the language is published in remarkably cheap editions of books, so that no one need be without good books. And no one need be without a good magazine who cares to have one. People who appreciate magazines, but can not afford to take the high-priced ones, are glad of the opportunity which the magazines of low price give. And there are many people who do not care enough for reading to take the old magazines, who yet will buy and read the cheaper ones; so these magazines have a mission—the encouraging of a taste for good reading which the others can not have.

That the cheap magazines are profitable to their publishers is shown by the fact of their continued existence and constant improvement. Their wide circulation makes them valuable to advertisers, who, by increasing the publisher's profits, enable him to improve the magazine without increasing the price.

It is probable that the cheap magazine has made a permanent place for itself in our modern life, for it appears to supply a "long-felt want." It will not drive out the old magazine, for there are always people who prefer to pay the highest price, and there is room for both. The old magazines have an established place and a mission of their own, but the new ones have demonstrated that a magazine can be both good and cheap. MARIAN E. JONES.

PROGRAM, WINTER TERM, 1904.

		AGRICULTURE.	DOMESTIC SCIENCE.	GENERAL SCIENCE.	ENGINEERING.	
Freshmen.	1	Rhetoric I A36	El. Physics C63	Geometry I... ..... C13	Blacksmithing I..... S36 Geom. Drawing (alt.), A80	Classics A62
	2	Geometry II..... ...A63	Structure..... A36	.....	Blacksmithing I..... S36 Obj. Drawing (alt.)...A80	Agriculture..... F59
	3	El. Physics..... C63	Geometry II A63	Structure..... A36	Agriculture F59	Blacksmithing I..... S36 Geom. Drawing (alt.), A80
	4	Sewing III..... K55 El. Projection (2½).. A80	Sewing II..... .....K58 El. Projection (2½) . A80	El. Physics C63	Geometry I A26	Blacksmithing I..... S36
	5–6	El. Projection (2½).. A80 Physics Lab. (2½)....C63 Blacksmithing I.....S36	El. Projection (2½).. A80 Physics Lab. (2½) ....C63 Foundry..... S38	Physics Lab. (2½).... C63	Structure..... A32 Obj. Drawing (2½)... A80	Geometry I ....A26 Geom. Drawing (2½)..A80
Sophomores.	1	Breeds of Stock.....G52	Home Architect..... A57	Higher Algebra..... A63	Oratory II (2½).....A51 Chem. of Metals (2½), C27	.....
	2	Organic Chem. (3)....C27 Chem. of Metals (2)..C27	Organic Chem. (3)....C27 Chem. of Metals (2).. C27 Dressmaking..... ...K58	Oratory I (2½)..... A51	Kinematics..... .. W33 Projection Drawing..A57	Trigonometry..... A72
	3	Oratory II (2½)..... A51 Physiol. Lab. (2½).. .F64	Dressmaking..... K58 Org. Chem. (3) ... .. C27 Chem. of Metals (2).. C27	Organic Chem. (3)....C27 Chem. of Metals (2)...C27	Projection Drawing..A57 Higher Algebra..... A72	Chemistry I..... C26
	4	Physiology..... F60	Oratory I (2½)..... A51	Projection Drawing..A57	Higher Algebra. .....A72 Kinematics W33	Chemistry I..... C26
	5–6	Chemistry Lab.....C54 Horticulture.....H26 Stock Judging	Chem. Lab..... C54 Dressmaking Lab.....K58	Chemistry Lab..... C54 Industrial	Chemistry Lab.....C54 Machine-shop I.....S33	Chemistry I Lab C51
					MECH. ENGINEERING.	ELECT. ENGINEERING.
Juniors.	1	Agr. Chemistry.....C26	Gen. History II..... .F56	Geology..... F28	Dif. Calculus..... A72	Dif. Calculus.... .....A72
	2	Forestry H26	Geology F28	Logic..... ... . .A33	Gen. History II. F56	Gen. History II.....F56
	3	Zoölogy..... .... F28	Dom. Sci. II (7) K31	.....	Physics (2½).... .... C60	Physics (2½) C60
	4	General History II....F56	Floriculture.... .....X 1	Gen. History II. F56	Valve Gears (2½). ..W33	Theory Elect. (2½)...C60
	5–6	Agr. Chem. Lab. .....C 4 Zoölogy Lab.... .... .F35	Home Nursing K32	Industrial..... .. .. Pers & Sketch. (2½), A57	Rhetoric II..... .....A60 Physics Lab. (2½).....C36	Rhetoric II..... ..A60 Physics Lab. (2½).... C36
	7–8	...., ...	....	.....	Mech. Drawing II.....S52 Machine-shop III.....S33	Electrical Lab. (2½), C36 Mech. Drawing II.....S52 Machine-shop III (2½), S33
Seniors.	1	Vet. Science II V52	Physics II..... C62	Elective.....	Mech. of Materials ..W33	Mech. of Materials... W33
	2	Plant Morphology.... F53	Eng. Literature I.....A60	German..... A33 Plant Morphology.....F53	Sound and Light.....C62	Sound and Light.....C62
	3	Econ. Principles..... F56	Plant Morphology.....F53	Eng. Literature I.....A60	Eng. Power Plants....C62	Machine Dasign. ....
	4	Physics II.....C62	Morphology Lab F65	Physics II . .....C60 Phil. of Education.... A33	Machine Design.....	Dyn. Elect. Mach C60
	5–6	Physics Lab.....C38 Plant Morph. Lab.....F65	Adv. Cookery.....K31 Physics Lab.....C38	Physics Lab.....C38 Plant Morph. Lab.....F65	Engineering Lab.....S35 Machine-shop S33	Elect. Lab..... .....C 9 Mach. Shop..... S33
	7–8	.....	.....	.....	.....	....

Freshmen.	1	Foundry.....S38	Agriculture.....F59	Cooking.....K30 Sewing II.....K59	Algebra III.....A26	Readings.....A60
	2	Foundry.....S38 Geom. Drawing (alt.), A80	Geometry I.....C13	Cooking.....K30 Sewing II.....K59	Readings.....A32	Algebra II.....A23
	3	Classics.....A62	Foundry.....S38	Readings.....A32	Cooking.....K30 Sewing II.....K59	Algebra II.....C16
	4	Agriculture.....F59	Foundry.....S38 Obj. Drawing (alt.)....A80	Algebra III.....C13	Cooking.....K30 Sewing II.....K59	Readings.....A36
	5-6	Algebra III.....A63	Readings.....A62	F. H. Drawing (2½)...A76	F. H. Drawing (2½)..A76	Algebra II.....C27
		FIRST YEAR CLASSES.				
Freshmen.	1	Algebra II.....F60	Woodwork.....S26 Sewing I.....K55	Composition.....A32	Algebra I.....A71	.....
	2	.....	Bookkeeping.....A71	Woodwork.....S26 Sewing I.....K55	Composition.....A62	Algebra I.....C60
	3	Readings.....A26	Algebra I.....A33	Bookkeeping.....A71	Woodwork.....S26 Sewing I.....K55	Composition.....K32
	4	Algebra II.....C27	Composition.....K32	Algebra I.....A63	Bookkeeping.....A71	Woodwork.....S36
	5-6	Readings.....A36	Algebra I.....A72	F. H. Drawing (2½)..A76	F. H. Drawing (2½)...A76	F. H. Drawing (2½)...A76
		PREPARATORY CLASSES.				
Prep.		Fifth hour.....	Arithmetic A.....F59	El. Physiology.....F60	U. S. History B.....A71	Grammar B.....W33
		Sixth hour.....	El. Physiology.....F60	Arithmetic A.....F59	Geography.....A26	Arithmetic B.....W33
		Seventh hour.....	Grammar A.....W33	U. S. History A.....A60	Grammar B.....F59	U. S. History B.....A26
		Eighth hour.....	U. S. History A.....A60	Grammar A.....W33	Arithmetic B.....F59	Spelling, etc.....A26
		DAIRY COURSE.	FARMERS' SHORT COURSE.			
			SECOND TERM.	FIRST TERM.		
Short Courses.	1	Butter & Chs. Mak....D31	El. Botany.....F53	Horticulture.....H26	Feeds & Feeding.....G54	Crop Production.....G56
	2	Dis. Dairy Ani. (2½)..V52 Bookkeeping (2½)....D31	El. Physics.....C63	Crop Production.....G56	Breeds of Stock.....G52	Feeds & Feeding.....G54
	3	Dairying.....D31	Farm Mech. & Mang..G56	Feeds & Feeding.....G54	Horticulture.....H26	Breeds of Stock.....G52
	4	Feeds & Feeding.....G54	Dairying.....D31	Breeds of Stock.....G52	Crop Production.....G56	Horticulture.....H26
	5-6	Boiler & Engine.....S34	Blacksmithing or Traction Engines.....S36 Grain Judging.....	Carpentry.....S26 Stock Judging.....	Carpentry.....S26 Stock Judging.....	Carpentry.....S26 Stock Judging.....
	7-8	Dairy Practice (10)...D20	.....	.....	.....	.....

SUCCESS AND COLLEGE MEN.

THE latest edition of "Who's Who in America" refutes the doubts expressed by a few successful men as to the value of college education as a factor in success, says the Leavenworth *Chronicle-Tribune*. In this volume are brief biographies of 11,551 Americans living on August 1, last, who had in some way won success. All the notable figures in public life, in the professions, in the worlds of commerce, industry, finance, art and letters, are here. Probably some names are in that should be out and some out that should be in. But taken all in all, this is evidently a fair poll list of Americans in some way distinguished.

Out of these 11,551 men and women of note 9,760 gave some educational data about themselves. Of these, 5,775 went to college and 4,810 were graduated. Only about one in one hundred of the able-bodied males of this country is a college man. The percentage of college women is far smaller. Yet out of the 11,551 men and women who have won the distinction implied by their enrolment in this volume more than one-half attended college. Of those giving educationial data, 59 per cent were collegians.

The case may be stated in another way: If all the men in this country could be shaken up in a box and one drawn out at random, the odds against drawing a college man would be one hundred to one. But if all the men who have done something of note in the various walks of life could be shaken up, the odds on drawing a college man would be more than even. If there be omitted from the calculation those who furnished details as to technical education only, and those educated at foreign institutions, the result is even more striking. Out of 8,141 which furnished details as to general education, nearly 71 per cent were collegians.

The old adage, "Knowledge is power," was never more strikingly demonstrated than by these figures. The men who are making the United States to day, and those who are determining its future, are largely the products of its colleges. The young men and women who are now entering college are those who will rule the republic a generation hence.

It is true that a man is a man, whatever be his education, and in the long run he counts just what he is worth as a man. Nevertheless, in the battle of life the man who counts nowadays is evidently the collegian. His chances for visible success as against the man without his equipment are plainly at least fifty to one.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres ... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Professor Ten Eyck entertained the farm clerks on Thanksgiving.

The annual meeting of the Manhattan Horticultural Society will be held at Horticultural Hall, December 10, at 2 o'clock P. M.

The snow on Monday of last week stopped the building operations on the new Auditorium and Dairy Hall for several days.

The Kansas Electricity, Light, Gas and Water Association, at its last meeting, November 19, elected Prof. B. F. Eyer an honorary member.

The Station office is busy mailing the sixteenth annual report of the Experiment Station of the Kansas State Agricultural College for the fiscal year 1902-'03.

This term will close Friday, December 18, and the winter term will open Tuesday, January 5. The examinations for entering will be held Monday, January 4, at 9 o'clock A. M.

At the football game in the Manhattan Athletic Park, Thanksgiving afternoon, between the Haskell Indians and the College eleven, our boys were victorious by a score of 34 to 6.

Professor McKeever lectured before the Thanksgiving meeting of the Southwest Kansas Teachers' Association, at Garden City, on "Education in Agriculture and Domestic Science."

The Agricultural College will be represented on the program of the State Teachers' Association by Prof. B. F. Eyer, who will read a paper on "Experiments in High-School Physics."

Representative Bevington, of Jewell county, attended chapel exercises last Thursday morning and made a brief address from the platform, encouraging the students to do their duty.

Professors Ten Eyck and Barnes attended farmers' institutes last week at Hutchinson, Hackney, and Caldwell. Doctor Barnes returned on Saturday morning and Professor Ten Eyck on Sunday.

Ex-regent C. B. Daughters, formerly of Lincoln, Kan., has bought the handsome residence of Mrs. D. C. Hulse, on Colorado street, and expects to move into it in a few days. The consideration was $4,200. We congratulate the ex-regent on his beautiful new home.

The *Students' Herald* and Manhattan *Republic* publish a large half-tone of the cast of characters in "East Lynne," as presented by the Alpha Beta society at the Manhattan opera-house, November 30.

Janitor Lewis has eighteen students enrolled on his janitor force this term. It takes a squad of first-class boys to clean all the offices, class rooms and laboratories every day and keep things in shape.

The Department of Physics and Electrical Engineering has lately received a fine new marble switch-board of modern construction. The work of placing it and connecting with the line system will be done by the students.

The faculty of the Mechanical Engineering Department will be increased next term by another assistant—Mr. Sumner M. Manly, of Providence, R. I., a graduate of the Massachusetts Institute of Technology.

Charles Weeks, first year student, and brother of Miss Ella Weeks, of the Industrial Art Department, left Saturday for New York City, where he has accepted a position with the Peter Cooper Hewitt Electrical Company.

Fred Myers, third year in the engineering course in '01, now in the United States submarine service, broke one leg and bruised the other while playing a game of football on Thanksgiving day. He lies in the naval hospital at Newport, R. I.

On December 3 the preparatory students, to the tune of about two hundred, had a class party in the Girls' Gymnasium. The evening was cold and stormy, but the large hall was thronged with merry young people, and all report a good time.

The senior electrical engineers as the hounds and the senior mechanical engineers as the hares had a Thanksgiving race. The hares were given four minutes' start and came out uncaught. The distance covered by the hunt was nearly four miles.

President Nichols has devised a new form of grade cards for keeping students' records. They are to take the place of the voluminous record books formerly used in the Secretary's office. Miss Perry is hard at work putting the record cards for this year in shape for the closing of the term.

The Kansas State Horticultural Society will meet in the statehouse in Topeka, December 29, 30 and 31. Sessions will be opened at 9 A. M., 1:30 and 7:30 P. M. of each day, at the rooms of the society at the capitol building. The Agricultural College will be represented on the program by Prof. Albert Dickens, who speaks on "Experimental Horticulture;" Professor Lantz, on "Birds and Horticulture;" Professor Popenoe, on "Fungi;" Prof. F. A. Waugh, horticulturist, Massachusetts Agricultural College, Amherst, on "Trading Fruit for Money."

The short course in agriculture which opens January 5, 1904, requires two winter terms of twelve weeks each for their completion. A young man cannot become educated in so short a time, but he can gain a great deal of useful information about agriculture and will receive many valuable suggestions and get new ideas which he may put in practice on the farm, and which will insure him a more profitable business and a more successful life. The impulse which a young man receives in taking the short-course work will cause him to think and observe, and will start him along lines of investigation and reading which if followed up will, along with the practical education of experience, often make him as able and well trained in agricultural lines as the man who spends many years in College. The short course in agriculture is not to be chosen in preference to the long course, but only when the conditions are such as to debar one from taking the four years' course.

The judging team of the Kansas State Agricultural College, for the students' live stock judging contest, at the International Live Stock Exposition, held at Chicago, Ill., November 27, 28, and 30, consisted of Messrs. R. N. Dorman, C. C. Elling, N. Schmitz, E. C. Gardner, and R. S. Wilson. The team was in charge of Professor Erf and Mr. Kinzer. The reports of the contest have not yet been determined, but it is hoped that the Kansas team will receive their due share of honors. The strongest competitive teams were from the Iowa, Ohio, Minnesota and South Dakota agricultural colleges. All these teams have been specially trained for this contest, some colleges even selecting their men last March and have been training ever since, but most of the teams began active training in September. The Kansas team received no special training, except in the regular class work. The choice of the students entering the contest was left to the class. With these conditions, the Kansas team stands on the merit of the instruction given in the stock-judging class in the regular course.

The annual meeting of The Kansas State Teachers' Association will begin in Topeka December 29, and continue for two days. It is hoped that there will be a large attendance and an excellent program. Kansas teachers will be glad to know that Dr. James H. Canfield, one of the foremost educators of America and a former president of this association, will give one of the leading addresses. Other eminent educators are being secured. Some of the leading topics for discussion at this meeting are: "Manual Training," "Problems of the Secondary School," "Moral Education," "The Professional Certificate," "School Legislation," "Kansas Educational Exhibit at St. Louis." There will be an abundance of material to interest teachers of all classes and grades, presented by efficient and trustworthy leaders of educational thought. It has been determined to ask for advance enrolments this year with the idea of saving time from the usual manner of registration in Topeka and of securing a larger and more interested membership for the association than could otherwise be done. All railroads will give rates of one and one-third fare for the round trip.

The thirty-sixth annual meeting of the Kansas Academy of Science, held at this College on Friday and Saturday of Thanksgiving week, was a very successful gathering. Many interesting discussions and various papers on scientific subjects were read. Forty-three new members were added to the academy. Officers for the ensuing year were elected as follows: President, Dr. Edward Bartow, Lawrence; vice presidents, L. C. Wooster, Emporia, and Prof. B. F. Ever, Manhattan; treasurer, A. J. Smith, Emporia; secretary, G. P. Grimsley, Topeka. The next meeting will be held in Topeka.

Warren Knaus, M. S., '82, of McPherson, Kan., has presented the local editor with a copy of a neatly printed pamphlet of forty-four pages containing a reprint of the letters to the *Entomologische Zeitschrift*, of Berlin, by Dr. Walther Horn, M. D., which this great authority on entomology wrote while traveling in America last year. These letters contain a wealth of scientific information on entomological subjects, especially on the *Genus Omus* of the Pacific coast. They were translated from the German by Prof. D. E. Lantz, of the Kansas Experiment Station, and printed at the expense of Mr. Knaus, with whom Doctor Horn spent several days in the study of entomological subjects special to Kansas.

The Horticultural Department acknowledges the receipt of a complimentary copy of V. Vermorel's "Agenda Agricole et Viticole." This is a most excellent and comprehensive volume of nearly three hundred fifty pages—a handbook of Agriculture and Viticulture. It is filled from beginning to end with a store of useful every-day facts. In the preparation of this volume Vermorel was assisted by leading professors, agriculturists and wine growers of France. In a trite and concise manner nearly every subject related to general agriculture, horticulture, viticulture, bee culture, dairying, farm animals, and hygiene of the home and farm, are treated. This little pocket edition closes with a farmer's monthly calendar and a diary for the whole year. Being written in the French language, its usefulness to our American farmers is limited.

Stay at home and freeze, or go to California where you can pass the winter under conditions that leave nothing to be desired—which will you do? Go to California? Good! The way to go is via the Rock Island System. Through standard and tourist sleeping cars daily from Kansas City and Topeka to Los Angeles and San Francisco. All meals in dining-cars. Golden State Limited in service beginning December 21. Handsomest train crossing the continent. Steam heated, electric lighted, new from end to end. Runs over the shortest line between the Missouri River and Southern California. If you are figuring on going to California, don't fail to obtain a copy of our book, "The Golden State." Worth its weight in silver to anyone who has never been to the Pacific Coast. Sent on receipt of six cents in stamps.—J. A. Stewart, General Agent, Kansas City, Mo.

The death of Dr. J. Robinson occurred here, on November 29, after a prolonged illness. He had been a practicing physician here since 1867, and also conducted a drug business here many years. The doctor was a veteran of the civil war, and ranked as a captain when mustered out. He was a thirty-second degree Mason, and was well known to the students of the Agricultural College.

ALUMNI AND FORMER STUDENTS.

Inez Manchester-Allison and T. W. Allison, both of the class of '98, welcome another daughter, born November 2, 1903.

R. W. Rader, '95, writes an interesting letter to the *Nationalist* from the Ozarks of Arkansas. Mr. Rader seems to be prospering as a fruit-grower in a prosperous region.

A. H. Leidigh, '02, who has been in charge of some experiments in Texas for the Bureau of Plant Industry, made a short stop here on his way to Washington for his winter's work.

J. W. Fields, '03, of the Dodge City Realty Company, called on us the first instant. He is assisting eastern buyers in getting some of the bargains in land which Ford county offers.

The many friends of Grace M. Clark, '92, learn with sincere regret that she is extremely ill with heart trouble. She is in the Berea College hospital now. Miss Clark is registrar of Berea College.

H. R. Thatcher, '03, sends some notes concerning the International Stock Show at Chicago. The following alumni were there in addition to Mr. Thatcher: J A. Conover, '98; Harry Bainer, '00; W. R. Hildreth, '02; L. S. Edwards, '03; W. H. Olin, '89; George Logan, '02; H W. Avery, '01; L. B. Jolly, '01; and R. G Lawry, '03. These with Messrs. Schmitz, Elling, Gardner, Wilson and Dorman, of the senior class, made the largest student representation the College has ever had at the great show. Mr. Thatcher states that the College and Experiment Station exhibits made at these shows are having an important effect in convincing the average farmer of the value of science in feeding problems.

The marriage of Miss May Moore ['98], of this city, and Lindley M. Dakin, of Coldwater, was solemnized Wednesday evening, November 25, at the home of the bride's mother, Mrs. Rebecca Moore, on Houston street. The ceremony was performed by Dr. John Hood, in the presence of relatives only. Mrs. Dakin has grown to womanhood in Manhattan. For the past three years she had been a very capable stenographer for the Manhattan Transfer Company. She was very popular among her friends. Mr. Dakin is a prosperous ranchman near Coldwater, Kan. They left Sunday for Wichita for a few days' visit. They will then go to their home near Coldwater, where they will be at home to their friends after December 10.—*Nationalist.*

The *Daily Pantagraph*, Bloomington, Ill., prints in full an address on "Domestic Science in the Public Schools" recently given by Miss Myrtle Mather before the Home Department of the Women's Club of that city. The paper is referred to as full of interest, especially to the public school-teachers and educators, practical, and well received. Miss Mather, '02, is now domestic science teacher at the Soldiers' Orphans' Home, in Bloomington.

Carl Rice, '97, in a letter to his brother, gives this picture of the scene of his duties as metropolitan policeman in Manila: "I am at the Central Station. Every morning the wagon brings the night's harvest of criminals from other stations all over the city, and a mixed bunch they are: Murderers, robbers, thieves, ladrones, conspirators, vagrants—white, black, brown, and yellow. They are lined up before the judge and he has the power to give from one day in Bilibid to life, and he certainly soaks them. Every afternoon the wagon takes a load of them to Bilibid, the largest prison in the world, which holds every class of criminal in the country from the army officer down to the blind street beggar. When on duty, I am generally stationed on the Bridge of Spain, and there every day one sees the Orient pass—afoot, on horses, in carriages, autos, and bullcarts—all jostling, crowding, hurrying in pursuit of the one object which brought them here, the almighty peso. All races and tribes are there: Americans, Negroes, Chinamen, Japs, Hindoos, Turks, Jews; all are passing there, an endless procession—the Twentieth Century and the Dark Ages. It is an interesting study if one has time to think about it; but I am kept busy keeping them straight."

The marriage of Miss Olive Maria Shelden ['98] and Mr. James Henry Parker, of El Paso, Texas, was celebrated Wednesday evening, November 25, at 8:30, at the home of the bride's parents, Mr. and Mrs. J. Q. A. Shelden, 526 Houston street, in the presence of relatives and a limited number of friends. The Rev. William C. Campbell assisted by Dr. John Hood, of the First Presbyterian church, performed the ceremony. As the bride and groom, unattended, entered the parlor, Lohengrin's wedding march was played by Mr. and Mrs. R. H. Brown, on violin and harp, the festive music changing to the soft strains of Annie Laurie as the ring service was read. The bride was charming in a gown of white silk pineapple tissue over cream taffeta, trimmed with a bertha of Duchess lace. She wore orange blossoms in her hair and carried bride's roses. The only ornament the bride wore was a beautiful diamond sunburst, the gift of the groom. After the ceremony a dainty luncheon was served. The bride received many beautiful and costly gifts from relatives and friends. Mrs. Parker was one of the most popular young society women of Manhattan. Her friends are legion, all of whom wish for her all possible joy in her new Southern home. Mr. Parker is by profession a mining engineer, and is well known in business and club circles in El Paso. Mr. and Mrs. Parker left Wednesday night for an eastern trip and will return to Manhattan for a short visit before going to El Paso, where they will be at home after January 15.—*Nationalist.*

Historical Society

VOL. 30 NO. 12

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I. T. U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.) ..... Director of Physical Training

MISS LORENA E. CLEMONS, B.S. (K.S.A.C.) ..... Secretary

JACOB LUND, M.S. (K.S.A.C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

Miss Ada Rice, B.S. (K.S.A.C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.) ..... Assistant in Music
William Anderson, B.S. (K.S.A.C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Ernest C. Gasser ..... Foreman of Blacksmithing
Miss Ina E. Holroyd, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K.S.A.C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K.S.A.C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.) ..... Bookkeeper
Miss Matilda Doll ..... Clerk in Post-office
Miss Mamie Alexander, B.S. (K.S.A.C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., DECEMBER 15, 1903. NO. 12

RACE SUICIDE—THE NEGRO.

IN AN article published in THE INDUSTRIALIST, October 20, 1903, was discussed race suicide as applied to the white race. The statements were confined to the censuses of the United States from 1850 to 1900, inclusive. Similarly and from the same sources this article has been prepared.

For convenience and other reasons, the same divisions of the United States are kept. Division A consists of Pennsylvania, New Jersey, and the states lying to the northeast; division B, all the former slave-holding states; C, the states formed from the Northwest Territory; D, Minnesota, North Dakota, and the states lying south thereof; E, the Rocky mountain and Pacific states.

The writer has read articles in which it was said the negro race was dying out; has heard individuals say the same; but these results have been obtained by the examination of statistics. One can form his own opinion from the facts herein gleaned from the censuses.

Whether the census is correct is quite another thing. Doubtless where there are so many illiterates the numbers of children of a particular age may be somewhat wrong, but there is scarcely any doubt as to the correctness of the total negro population.

Near the close of the civil war the matter of arming and freeing the slave who went into the ranks was discussed and advocated by some of the Confederacy. In order to prepare the public mind for such a thing, in February, 1865, in the Capitol Square, Richmond, Va., a public meeting was held and the matter discussed. Over this meeting presided R. M. T. Hunter, an individual distinguished for his services both in the Federal and Confederate congress. Mr. Hunter, in his speech upon that occasion, said that under the existing system the slaves were provided for and were happy, but under a system of emancipation they must perish.

"In the fierce competition for food between white and negro, the latter will be blasted like human life before the burning Sirocco, and vanish like mist before the sun." The facts herein given do not seem to bear out the prophecy.

Table of Approximate Areas (Square Miles).

Divisions.	A	B	C	D	E
	169,000	895,000	249,000	447,000	1,188,000

Density of the Negro Population per Square Mile.

Divisions.	1850	1860	1870	1880	1890	1900
A	.88	.92	1.06	1.35	1.60	2.27
B	3.84	4.71	5.07	6.81	7.69	8.96
C	.18	.25	.52	.73	.81	1.03
D	.00	.00	.05	.12	.15	.29
E	.00	.00	.00	.01	.02	.03
United States	1.23	1.50	1.65	2.23	2.53	2.99

Each particular division is constantly below the average for the United States, except division B. In this the average is far above that of the entire country. Each division shows a steady increase, although in D for 1850 and 1860, and E for the same years and 1870 the number cannot be expressed in hundredths.

The method of computing the following percentages is the same as that employed in the article upon the white population.

Per Cent of Children in Negro Population.

Divisions.	1850	1860	1870	1880	1890	1900
A	12.302	12.023	10.955	11.271	9.109	8.949
B	16.690	16.434	16.493	17.164	14.392	14.250
C	15.216	14.822	14.132	12.955	10.208	8.473
D	12.096	14.490	16.053	13.832	11.257	10.976
E	4.444	9.370	9.419	12.976	10.147	6.805
United States	16.366	16.191	16.222	16.805	14.027	13.775

The above shows a remarkable decrease in percentages from 1880 to 1900, and yet in that time the actual increase in children under five years of age was a little over 110,000; while the total negro population increased 1,353,108. By the same census the total negro population from 1880 to 1890 increased 893,123, while the children decreased somewhat over 57,000.

But the writer is not responsible for the census, yet to him there seems some grim humor about these statements.

Division A.—Maine has 27 less, New Hampshire 142 more,

Vermont 108 more in 1900 than in 1850. Maine is the only state in the Union showing fewer negroes in 1900 than in 1850. In New York, out of a total of 99,232 there were 6000 more females than males in 1900. Since 1850 the negro population has increased 157.42 per cent.

Division B.—In 1850 the increase of children among the free negro population was 14.166 per cent; for 1860, 14.322 per cent; the increase of the slave population for the same time was 16.879 per cent, and 16.573 per cent.

Free Negroes.	*1850.*	*1860.*
Florida	932	932
Mississippi	930	773
Texas	397	377
Arkansas	608	144
Total	2867	2226

To the square mile, Alabama has 15.83; Virginia, 16.46; Georgia, 17.57; Mississippi, 19.38; South Carolina, 25.59; while the aggregate negro population of these states is 4,212,793. The increase in the negro population from 1850 to 1900 is 132.933 per cent.

Division C.—These states had, in 1850, only 45,195 negroes. This number has been increased 470.51 per cent.

Division D.—This division had, in 1850, only 372 negroes; in 1860, 1953; in 1900, 132,359. The base, 372, being so small shows the percent of gain to be very large.

Division E.—This division had, in 1850, only 1215; in 1900, 30,254. The gain per cent is large, though the actual gain is quite small.

In Kansas the negroes have increased from 625, in 1860, to 52,003, in 1900.

Gain Per Cent by Decades.

1850-'60	1860-'70	1870-'80	1880-'90	1890-1900
22.053	9.876	34.795	13.577	18.111

This table seems to show the population comes by waves,—low pressure, high pressure. If this be true the conditions between 1870 and 1880 were nearly cyclonic, for at that rate the population would a little more than double itself in thirty years. As a matter of fact, the negro population from 1850 to 1890, a period of forty years, did double itself, with nearly 200,000 to spare. The increase from 1850 to 1900 is 142.50 per cent.

Distribution of Negro Population.

Per cent area.	1850	1860	1870	1880	1890	1900
B..... 31.098	94.605	95.910	93.013	92.680	92.214	90.872
Others..... 68.902	5.395	5.090	6.987	7.320	7.786	9.128

This table is worthy of careful consideration. Here, in less than one-third of the United States, for the last fifty years, has been collected more than 90 per cent of the negro population. During this time a great war came and went. One part of the country determined that slavery should be restricted to the states where it was—should not be extended; the other believed in the paramount sovereignty of the states, and acted accordingly. The negro was the central point about which the issue eventually revolved. The war ended, the fundamental law of the land was changed—slavery abolished; all persons born in the United States were made citizens of the United States and of the state wherein they resided; males of a certain age were enfranchised. A revolution had occured within five years of the close of the war.

The white population of division B practically agrees that certain persons shall not vote; the other divisions substantially agree, by their silence, that B is right so far as that section is concerned. And so there exists the singular phenomenon that concerning this people a fundamental law may be ignored. Can this be done with safety? The answer is that the people of this country, is an exceedingly just people, loves fair play, and in the end will correct what is wrong.

All the statistics show a steady increase in the negro population, except in one state. If Mr. Hunter's Sirocco has struck any place it is only Maine, where it took fifty years to blast 27 out of a total of 1356. If the remainder are to "vanish like the mist before the sun," they have, at the same rate, 2810 years yet in which to do the "vanishing" act. Long before that time the rest of us will have become ghosts.

B. S. McFarland.

Much to the consternation of a few students who had entered College last fall considerably deficient in spelling, Professor Walters announced from the chapel platform on Tuesday a special examination. The results of the official quiz were not overly flattering for some of the quizzees.

WOOD ASHES AS A FERTILIZER.

AN average sample of unleached wood ashes contains about seven per cent of potash and two per cent of phosphoric acid, which at current retail prices of these plant foods makes average wood ashes worth about forty-five cents per hundred pounds, or nine dollars a ton. Besides the actual fertilizing value by reason of the potash and phosphoric acid contained in the ashes, there is some value to ashes simply from the power which potash has to make the nitrogen of the soil available for plants by its chemical action on the organic matter and humus in the soil. The potash in ashes exists in a readily soluble form, and is thus immediately available for plant food. Ashes also contain a little magnesia and a considerable amount of carbonate of lime, which is of some importance because of its effect in improving the texture of heavy soils. The farmer can better afford to pay eight or ten dollars a ton for good wood ashes than the usual rates for almost any potash fertilizer.

Leached ashes have rarely more than one per cent of potash and one and a half per cent of phosphoric acid, which will make them worth about three or four dollars per ton. Coal ashes are probably not worth fifty cents per ton as a fertilizer, but on heavy soils they may often be applied with profit just for their loosening effect, and they are valuable as a top dressing or mulch in fruit gardens. Sifted coal ashes absorb liquids, fix volatile ammonia and prevent offensive odors and are valuable as absorbents under hen roosts or in stables. Wood ashes should not be placed under hen roosts or in stables, because potash liberates ammonia and the quality of both the manure and the ashes as fertilizers is deteriorated.

On average soils, fruits and vegetables are benefited by liberal applications of wood ashes, and remarkable results have been obtained by the use of ashes on legume crops, especially clover and alfalfa. Ashes will not make so valuable a fertilizer for top dressing for wheat as when used with the crops mentioned. Corn, Kafir-corn and cane will doubtless be more benefited than wheat by the use of ashes as a fertilizer. However, if the soil is lacking in the potash element, a dressing of wood ashes will benefit almost any crop. Most of the soils of Kansas are well supplied with potash. If there is any part of the State in which this element of plant food is apt to be lacking in the soil it is in the eastern part,

where the land is old and the plant foods have become exhausted to some extent. In the eastern and middle states it is more usual to apply ashes in orchards, or upon onion or cabbage fields.

Ashes are best applied in the spring, separately or in connection with phosphate fertilizers as a top dressing. For cultivated crops the ashes should be spread broadcast after the land has been harrowed and made practically ready for the crop, and cultivated in by light harrowing. On onions a light dressing is sometimes applied with good results when the plants are two or three weeks old, and I believe that no harm will come to the wheat by a light application of ashes this fall, or early next spring. There will tend to be some waste to the soluble potash if the ashes are applied late in the fall or during the winter, by surface drainage or leaching.

Ashes may be applied at the rate of fifty to one hundred bushels, or one or two tons, to the acre. One ton of good wood ashes will contain about one hundred forty pounds of potash and forty pounds of phosphoric acid, which is more of each of these elements than any ordinary crop will take from the soil in a single season. If leached ashes are used, the quantity applied should be increased. I think it will be impossible to spread the ashes thin enough with the manure spreader. Spread in this way, there is likely to be not only a loss of fertilizer because of the too abundant supply, but there is also likely to result injury to the growing crop by reason of the presence of too much alkali. Ashes may be applied by sowing broadcast by hand, provided the hand is protected, or it is possible by care to spread them thinly enough from a wagon with a shovel. If the ashes are fine and clean, it is possible to spread them with a revolving broadcast seeder.

In wood ashes we have the most serviceable and often the very cheapest fertilizer for peat and muck lands. Such soils are rich in nitrogen and usually poor in phosphoric acid and potash. The nitrogen is also in an unavailable condition, and by application of wood ashes, potash and phosphoric acid are not only supplied, but by the chemical action of the potash on the peat the nitrogen is brought into a condition available to the plant. I know of farmers who collect the ashes of neighboring villages. They usually furnish barrels into which residents prefer to put their ashes rather than throw them into the streets or door yards. I know of one instance in which a farmer ocated two and one-half miles from

town collected ten tons of good ashes during the winter, which cost less than $5.00 per ton after the ashes were spread on the field.

Sawdust has no value as a fertilizer, but it may have some value in the physical effect which results when it is applied to light, sandy soils. It tends to make such soils hold water better, and when applied on the surface acts as a mulch to retain the water in the soil below. Such a combination of ashes and saw-dust might be made so that the mixture could be applied with the manure spreader without getting on too heavy a dressing of ashes.

A. M. TEN EYCK.

THE SOIL.

THE soil is that part of the earth's crust in which plants grow. Physically it is made up of the fine particles of rock, humus, soluble salts, soil moisture, and soil bacteria, with the presence of free air. Professor King, in his book, "The Soil," also mentions as a separate portion of the soil the binding material, silicate of aluminum, which gives the adhesive quality particularly noticeable in clay.

The depth of the soil varies from many feet in the fertile plains and valleys to only a few inches on the rocky ledges and hillsides. Usually the farmer distinguishes "soil" and subsoil. The "soil," or soil proper, is the part which is cultivated and turned by the plow; that part beneath the furrow is known as the subsoil. The subsoil differs from the "soil" in being more compact in texture and is usually lighter in color because it contains less humus than the "soil." The subsoil also is lacking in bacteria. When brought to the surface it is in effect "dead" soil, and plants will not grow and thrive in it until it has weathered for a year or two and the bacteria have multiplied to such an extent that the available plant food may be produced in quantities sufficient for plant growth.

Rock Fragments.—Rock fragments constitute the bulk of the soil by weight and volume, and supply all the mineral or ash ingredients of plants. The class of soil, its fertility and general characteristics are largely determined by the coarseness or fineness of the rock particles or "soil grains" of which it is made up. The coarse-grained, sandy soil has a small water capacity, is too open and leachy, dries out quickly unless well protected with the

soil mulch, and is usually deficient in fertility, particularly in humus. The finer grained loam or clayey soil is usually more difficult to plow and cultivate than the sandy soil, but it will hold more water, is richer in humus and soluble salts, offers better and more feeding ground for the roots of the plants, is not so leachy, and does not dry out so rapidly in time of drouth.

Humus.—Humus is produced by the growth and decay of vegetation, and its presence in the soil decreases with the depth below the surface. The amount in the soil varies from one to three per cent in sandy soil to six to eight per cent in loam and twelve to eighteen per cent in rich swamp land. Humus is the source of nitrogen in the soil, and through the action of bacteria it is gradually converted into nitric acid, which uniting with the mineral elements forms the soluble nitrates, which are readily absorbed by the roots furnishing nitrogen for most plants.

Soluble Salts.—A fertile soil will contain only a small quantity of soluble salts at any time, usually less than one per cent of its dry weight, and only a small portion of this will consist of those essential elements which the plant uses as food. The soil grains continue to dissolve very slowly by the further disintegration of the rock particles in the presence of water, assisted by the juices exuded from the roots of the plants, while the action of the bacteria on the humus gradually decomposes and reduces it to a soluble form. A part of the food of the plant is gradually made available during the growing of the crop. This is especially true of the nitrates. Seldom in the ordinary practice of farming has the chemist found sufficient nitrates developed in the soil at planting time to produce the maximum crop. The preparation of the plant food by which it becomes available to the plant is greatly influenced by the soil temperature, soil ventilation, and presence of soil moisture, and hence by soil cultivation, which is a regulator of these three important factors in plant growth.

Soil Bacteria.—The purpose and action of bacteria in the soil is not fully understood. The value and the importance of the symbiotic bacteria, which live upon the roots of leguminous plants, withdrawing the free nitrogen from the air and storing it up in the soil and in the plant, are fully recognized by every intelligent farmer. That nitrifying bacteria are present in all fertile soils is an established fact, but their exact place in the decay of organic matter in the soil and the relation of bacteria to the de-

composition process has not been fully worked out. It is an established fact, however, that if the bacterial life be destroyed the land becomes at once unfertile and such soil may only become fertile again as the bacterial life is reëstablished. The bacterial life of the soil may be drowned out, burned out, or dried out.

An instance of the destruction of bacteria by drowning was brought out at the meeting of the State Grain and Stock Growers' Association, at Fargo, N. D., in January, 1902. While the subject of conserving soil moisture was being discussed a farmer made this statement: "I had a rather low piece of land that I wanted to summer fallow in 1899, but before I began plowing, heavy rains fell and flooded the land. As fast as the water went off, I plowed the land. and I have not raised a crop since. I would like to know what is the trouble?"

The question was answered as follows: "You probably plowed the land too wet, which would leave it in a bad mechanical condition from which it would not recover until after a winter's freezing; also, if the water was on the land for some time, it may have killed out the life of the soil, the bacteria which are constantly working over the elements of the soil making them available for the plants. It would take several years for the bacterial life to renew itself sufficiently to reëstablish a fertile condition of the soil."

During the winter and early spring the bacteria are in a dormant state and the land may be flooded for some time without destroying them, but during the growing season the bacterial life, as well as the crop growing on the land, may be injured or destroyed by too much water. The bacteria of the soil may be destroyed also by burning the stubble, and even the hot sun of midsummer in dry and uncultivated fields, if it does not actually destroy the bacteria, at least keeps them from multiplying and performing their work in the preparation of the ground for the next season's crop. Experiments have shown that nitrates are developed fastest in a warm, moist soil, and thus cultivation is necessary to assist bacteria in their work.

Soil Air.—In every fertile soil there must be a free circulation of air to carry off the foul gases given off by the decay of roots and humus. The germinating seed, the growing roots and the soil bacteria must have a supply of free oxygen or growth and life ceases. The symbiotic bacteria must also have a supply of free nitrogen as well as oxygen. When the grain or corn turns yellow,

be the weather wet or dry, it indicates a lack of soil ventilation—the roots need air. Deep plowing, thorough cultivation and the growing of deep-rooting crops are aids in soil ventilation.

A. M. TENEYCK.

INCORRECT STANDING POSITION.

A GOOD standing position is almost necessary to good health. Very few people know how to stand properly. This especially noticeable among students. Nine out of ten of the girls of our own College have some physical deformity resulting from incorrect standing or sitting position. Round shoulders and flat chests seem to be the most common faults.

The reason for this is easy to understand. Very few children are taught how to sit properly at the desk in school. Very often the desk is either too high or too low for the pupil, and instead of making the desk to fit the children, the children are compelled to fit the desk The result is almost always either posterior or lateral curvature of the spine.

Then again, some part of the body may be thrown out of position by always carrying books or packages on one side only. This is a very common fault, and usually results in raising the shoulder of one side and lowering the opposite side.

Posterior curvature or round shoulders is far more common than lateral curvature. It is caused by relaxation of the back muscles allowing the spine to fall backward of its own weight, the head and shoulders falling forward. The flatness of the chest is the result of round shoulders. The flat chest means that the lungs are not allowed to expand to their fullest extent, consequently there is greater danger of consumption and other lung diseases. The general health is also much impaired by lack of oxygen.

It is obvious, then, that the first thing we must work for is the proper standing position. The correct standing position is as follows: Heels together, feet turned out at an angle of ninety degrees; knees straight; body erect on the hips, which are drawn slightly backward; chest expanded; shoulders backward and downward; arms hanging of their own weight close to the body, with hands extended; head erect, chin drawn in; weight of the body on the balls of the feet. The body should be poised so that a line drawn just in front of the ear will fall just in front of the shoulders and through the balls of the feet.

ESTELLA M. FEARON.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres., Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Professor Eyer has a very neat new bookcase in his office.

Final examinations next Thursday and Friday—then vacation.

Prof. D. E. Lantz shipped over 100 cans of prairie-dog poison to western counties last week.

The Department of Animal Husbandry has commenced another series of steer-feeding experiments.

The Alpha Bètas had their term party last Monday night, in their society hall, and it was a merry party, too.

Mrs. R. J. Brock and her mother-in-law, Mrs. Brock, of Centralia, Kan., visited College one day last week.

Prof. Henrietta W. Calvin attended the thirty-third annual session of the State Grange, at Arkansas City, last week.

Prof. W. A. McKeever will discuss "Culture; the True Aim of High School," at the meeting of the State Teachers' Association.

F. A. TenEyck, a brother of Professor TenEyck, has arrived from Broadhead, Wis., to take the farmer's short course next winter term.

The College A orchestra has twenty-six members this term, the A band thirty-seven, the B orchestra twelve, and the B band thirty-two.

There were only nineteen cases of tardiness in November in the Manhattan city schools—nineteen cases out of over thirty-two hundred chances.

The Chemical Department has recently received over fifteen hundred reagent bottles and three analytical balances for equipping the laboratory for more advanced work.

Prof. Wm. R. Carter, principal of the Topeka Industrial and Educational Institute, colored, visited College Friday, in search for an instructor in agriculture. The institute now has a hundred-sixty-acre farm east of Topeka.

The Music Department has lately added a new Eb Conn saxophone, an Eb melophone and a new single-headed drum to its equipment. These instruments are valued at about $180 and are quite on acquisition to the inventory of the department.

Miss Ada Rice entertained the Misses Hopps, Vandivert and Holroyd at dinner Saturday evening.

The third number of the College lecture course was given in the College chapel last Tuesday night, consisting of a very interesting lecture by the well-known Hon. Geo. R. Wendling.

The football contest Friday, December 4, in the Manhattan Athletic Park, between the Hamiltons and Franklins, resulted in an easy victory for the Hamiltons. The score stood 22 to 0.

The Marshall County Club met at Professor Walters' home last Thursday night. There were about twenty students present and all report a good time—music flinch and light refreshments forming the program.

The College catalogue of 1902-03, of which an edition of ten thousand was printed last June, has been exhausted for some time, but the request for copies is as lively as ever. A special edition of THE INDUSTRIALIST, No. 10, has been sent out of late to answer questions concerning courses, rules for admission and general directions.

Pres. E. R. Nichols attended the convention of the Western Kansas Irrigation Association, held at Garden City, December 9 and 10, and read a paper on "Rainfall and Irrigation." He reports a good meeting and much enthusiasm. There were over forty delegates and about one hundred fifty other interested parties present at the different sessions.

At the request of Mr. E. H. Webster, special agent of the Department of Agriculture, Mr. Shaw is making a critical test of the Babcock method of determining fat in cream. It is claimed that the test as ordinarily used gives results that are too high, and now that the use of the hand separator has become so general the question of the accurate determination of fat in cream is of great importance.

At the twenty-first annual meeting of the County Clerks' Association of Kansas, to be held at Manhattan, December 16 and 17, addresses will be made by F. Dumont Smith, of Kinsley, and Ed Hoch, of Marion. C. M. Breese, county clerk of Riley county, who is vice-president of the association, will respond to an address of welcome given by the president. The State association of county commissioners will meet here at the same time. A large attendance is expected.

The Beloit *Gazette* of December 3 contains the following: "The following resolutions were passed at the farmers' institute in session at Star church, Saturday, November 28: 'Be it resolved, that we heartily indorse the work of our Experiment Station as being of great value to the farming industries of Kansas. Also, we recommend that our county representative and State senator be instructed to vote for an appropriation sufficient to properly carry on this work.'"

The Herald Publishing Company has elected the following staff officers for the ensuing year: Literary editor, F. L. Bates (reëlected); associate business manager, F. E. Balmer; associate local editor, W. R. Ballard; exchange editor, Marcia Turner; reporter, C. H. White.

FARM NOTES.

When the humus in the soil becomes deficient, not only does the soil lack in fertility, resulting in poor crops, but the physical condition of the soil becomes such that the environment is unfavorable to the root development of plants, and the capacity of the soil to absorb and hold moisture is lessened.

Soil humus is partially decayed organic matter, largely the remains of vegetation, of the roots of plants and the parts which grow above ground. The droppings of animals and the barn-yard manure which may be applied to the land is only the returning to the soil a part of what was previously taken from it in the form of crops. Practically, then, the supply of humus in the soil is largely dependent on the crops grown upon the land and the use made of the crops, *i.e.*, whether they are sold and removed from the farm, or fed upon the farm and the manure returned to the soil.

The most uncertain, yet the most important factor in the production of crops, is the moisture supply. Enough rain falls throughout the larger portion of this State to produce maximum crops, but its distribution as to time and amount is such that crops often suffer for lack of moisture. The farmer cannot control the rainfall, but he can control to a large extent the amount of moisture which is taken into and conserved in the soil ready for the use of the crop at the time when it needs it worst. At the North Dakota Experiment Station it was demonstrated that two or three inches of water conserved in the soil by cultivation was equivalent to fifteen or twenty bushels increase in the wheat crop in the dry season of 1900.

The Farm Department of the Experiment Station is making an extensive study of the moisture content of the soil as it is effected by different methods of cultivation and the growing of different crops. Several hundred samples of soil have been taken for moisture determinations during the season. The method used in determining the amount of moisture in the soil is as follows: Samples are taken with the soil tube or soil auger and placed in tin trays, which are provided with tight-fitting covers. The trays are placed at once in a galvanized iron trunk, which is kept closed. When the trunk is filled or a set of samples have been taken the trays are removed to the laboratory and the weight of each sample taken, then the cover is taken from each tray and the sample is placed in a drying oven, heated to a temperature a little above that of boiling water from eighteen to twenty hours. When the drying is completed the samples are reweighed and the loss or percentage of moisture is calculated. Assistant H. C. Kyle, '03, has charge of the details of this work.

So far as tillage is concerned there are at least three great essential steps in soil moisture conservation: (1) Ground must be put in such condition that the rain may be received and carried down into the soil. (2) A proper texture must be maintained in the subsurface soil so that this stored up water may be brought back by capillary action to the seed and roots of the young plants. (3) In order that water shall not be wasted by evaporation from the surface, a loose mallow mulch of soil must be maintained which will serve as a blanket to keep the water from escaping into the air.

Virgin soil is characterized by its excellent tilth and productiveness. It is mellow in texture and rich in humus, which gives it power to absorb and hold a high percentage of moisture. As the land gets old by being continually cropped, the soil loses its humus and its capacity to hold moisture is reduced. It loses the mellow, leachy texture, dries out quickly and bakes after a rain, and in a dry time it becomes too loose and ashy, easily drifting with the winds. The excellent tilth characteristic of virgin soil can be largely regained by laying the ground down to grass and legumes for a few years. This is nature's way of renewing the humus and of restoring the soil texture and soil fertility.

ALUMNI AND FORMER STUDENTS.

Most of our readers know that Miss Florence Corbett, '95, now fills the position of dietician to the department of public charities of New York city. She was appointed October 1, 1902, and as the office was a new one the innovation by the commissioner of charities was subjected to some criticism and much ridicule. A report of the department and a recent number of the *Evening Post* show that Miss Corbett has had much to do and has done it well. Space does not permit even a complete abstract, but it appears that she is in entire charge of the purchasing of the food supplied the various charitable institutions, and by her scientific knowledge and practical experience has immensely improved the dietetic conditions, and at the same time effected a material saving in cost.

The community was shocked last week by the sudden death of Albert Melton, father of Alice Melton, '98. He had been in usual health and was some miles from home, having been doing some field work. He was apparently just ready to start back when an apoplectic stroke took him. His family became anxious on his non return, and a searching party ascertained the sad truth. Mr. Melton was a very quiet and modest man and was not intimately known by many, although he had lived near Manhattan for eighteen years. By those who knew the depth of his nature, his keen sympathy, integrity and altogether admirable character, he was much beloved. He will be much missed by many beside his mourning wife and daughter. The deep sympathy of all is accorded Miss Melton and her mother. Mr. Melton's death occurred Monday, December 7.

Historical Society

VOL. 30 NO. 13

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
JOHN D. WALTERS, M.S. (K. S. A. C.).....Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.).....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.).. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.)..... .....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York)...Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University).....Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A..Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.).....Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) .....Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.).....Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.).....Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.).....Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.).....Secretary

JACOB LUND, M.S. (K.S.A.C.).....Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave....Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal).....Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University)....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) .....Asst. Professor of Mechanical Engineering

Miss Ada Rice, B.S. (K.S.A.C.).....Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.).....Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.)..... Assistant in Music
William Anderson, B.S. (K.S.A.C.).....Assistant in Mathematics
Miss Gertrude Barnes.....Assistant Librarian
William Baxter.....Foreman of Greenhouses
Louis Wabnitz .....Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School).....Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) .....Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music).....Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.).....Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) .....Assistant in Entomology
Leslie F. Paull, A.M. (Brown University).....Assistant in Botany
Miss Emma J. Short .....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.).....Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.).....Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.).....Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.).....Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn).....Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago)..... Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal).....Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.).....Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) .....Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College).....Assistant in Animal Husbandry
Geo. C. Wheeler, B.S. (K.S.A.C.)..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.)..... Assistant in Chemistry
Sumner M. Manley, S.B. (Mass Inst. Tech.).....Assistant in Mechanical Engineering
James Cran.....Foreman of Blacksmithing
Robert E. Eastman, M.S. (Cornell University).....Assistant in Horticulture
Miss C. Jeanette Perry, B.S. (K.S.A.C.) .....Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.).....Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.).....Bookkeeper
Miss Mamie Alexander, B.S. (K.S.A.C.)..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.).....Clerk in Botanical Department
Charles Hughes.....Secretary to the President
William R. Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., JANUARY 12, 1904. NO. 13

A LITTLE VISITED REGION.

SOUTHEASTERN Missouri and northeastern Arkansas constitute a section of country that is little troubled by visitors from without. A few hunters from St. Louis go down every winter to shoot the abundant deer and wild fowl, the slaughter of which is fostered by the lax game laws of the state of Arkansas. If you turn to the map, you will find the western boundary of the "heel" of Missouri to be formed by the St. Francis river, which separates it from Arkansas at that point. It was the writer's privilege to pay two visits to this region, in the interest of the Missouri Botanical Garden in St. Louis, a couple of years ago.

Going from the noisy, smoky, dirty city of St. Louis, a night's ride lands one beyond the Missouri boundary, in the little Arkansas town of Paragould, the business of which is to make lumber and ship apples. From there one takes, or is taken, by a little train that starts when it gets ready and goes as fast as it has to, eastward through the swamp toward the St. Francis river, which is reached at the station called Bertig, on the Arkansas side, opposite the extreme southwestern portion of that little downward projection of Missouri territory we have called the "heel." Bertig is a platform in the midst of a cypress swamp, with a little house adjoining, the owner of which accommodates the visiting hunters with board, lodging, and stories. The writer was after some plants that grew down in the depths of the swamp somewhere, and was to find someone who could pilot him into its fastnesses. All of this region from Bertig east to the Mississippi is typical of a large portion of the middle Mississippi drainage territory, and that of its tributaries, for many miles east and west of the great river, where it runs through southern Missouri, Illinois, Arkansas, and Tennessee. The country is intersected by streams and spotted with lakes, ponds and inlets from the rivers, which merge into the swamps of cypress trees constituting the

dominant physical feature of the region. The rivers are clear, swift flowing, grading off without definite banks into the swamps on either side, and broken up and bordered by bulrushes and reeds, which often so completely fill the streams that an inexperienced boatman will miss the channel and go wandering off through the open spaces into the labyrinths of winding water-ways among the reeds, to become easily and very effectually lost in an uninhabited swamp.

The writer borrowed a boat and proceeded to navigate in search of a guide. Now the natives of the country, who are few and of rather poor quality, spend their days in hunting and fishing and, during the hunting season, in acting as guides to city sportsmen. Their lives are not particularly arduous, the climate is rather mild, food can be had for the taking, and there are neither rent, taxes or the other adjuncts of strenuous living to disturb the unruffled calm of their existence. Indeed, one would not suspect their presence unless one were to spend a little time at one of the swamp stations, such as Bertig, where a post-office and a flour-and-bacon store dispense the indispensibles of our civilization to such of the inhabitants as please to come for them. At about train time, therefore, one may see here and there, up and down the river from their lonely habitations in the swamp, dug-out canoes skillfully propelled, bringing their owners to witness the one, solitary "event" of the peaceful day—the arrival of the bumping little train which manages to wriggle its way into and out of the jungle once every twenty-four hours. A few hours of slouching around the station, a few ducks or minks exchanged at the "store" for a little flour and coffee and the inevitable plug of "terbakker," and the gaunt, malarious denizens of the Arkansas and Missouri back-woods, braced with a liberal "chew," and perhaps further fortified by a jug of something or other under the seat of the boat where it will be handy, glide back in their dug-outs into the silent wilderness from which they came, leaving the post-master and the store-keeper free to set fish-lines, clean guns and swap opinions about the last visitor from St. Louis. It was for one of these care-free citizens that the emissary from the Botanical Garden was hunting, and he was found at last. The Arkansas native, with his boy, had a canoe. It didn't look very secure on its bottom, being very long and "reachy," narrow amidships, and innocent of a keel. The St. Louis man preferred to do his own navigating, so the boat

already referred to was borrowed again, and the procession started for the froggy home of the swamper.

Now, the next time the writer visits this region he will penetrate its fastnesses in a native boat or not at all. Boats, like all tools, are the products of their environment. The narrow canoe of the native, propelled by two persons, one erect in the stern with a long pole flattened at one end to form a narrow paddle, the other seated in the bow with a short, broad oar, is a machine capable of going at high speed, is easily managed, and glides in and out with snake-like ease through the little bayous and the narrow, winding channels of the reed-choked rivers. The boat which the writer hereof unluckily manned was the property of a city man who had imported it for his own use. It was built on the usual lines of the park pleasure boats, in which the bank clerk softly rows the typewriter girl of a Sunday afternoon, on the manufactured lagoons in a Jackson or a Lincoln park in Chicago. It is a good boat for the purpose for which it was made, and the conditions under which it works—smooth open water, short distances, and general purposeless idling—but for business purposes in the swamps of Arkansas, that boat was as ludicrous and as helplessly out of place as a canary in a corn-field. It was maddening to watch the unstudied ease in the motion of the two rowers ahead. Erect as a gondolier, the elder sculled at the stern, sending his narrow craft scudding along by apparently careless and effortless movements. They were plainly paddling lightly for the benefit of the toiler in the tub behind. It was necessary for the latter to keep the canoe constantly in sight, for by dozens of openings the river channel divided among the giant reeds, and it was no difficult matter to lose sight altogether of the elusive current that alone marked the real course of the stream. To do this, it was imperative, of course, to face the boat's bow and row backward, which did not materially add to the comfort of the rower. But even beneath the shower of perspiration from under the eaves of his hat, he could not fail to recognize the beauty of the mysterious wilderness. A glowing sunset lighted up the water, tipped the reeds with gold, and against the luminous sky the wierd bodies of the great cypresses stood black and forbidding. They would loom up suddenly upon the boat's bow, as a bend in the river was reached, seeming to block the very course of the stream. Com-

ing closer, one saw that every little hummock of half-emerged ground in the midst of the river bore its burden of cypress.

Not like our familiar land trees are these swamp cypresses, nor indeed does the tree reveal its wierd possibilities when grown on ordinary drained soil, for in the water the boles, at the point where they emerge from the surface, swell out like gigantic pumpkins, while from the top of these great wooden globes the rest of the trunk rises with a much reduced diameter. One imagines the shivering trees drawing their lower extremities up out of the ever-present water into a compact and huddled ball for protection. Moreover, all through the swamp there projected from the half-submerged surface the queerest looking lot of irregular sticks, two to six inches in diameter at the base, narrowing in their foot or two of height to a blunted point. These meaningless-looking brown wooden objects covering the watery flats excite the curiosity of the most uninterested non-botanical observer, and even to the botanist who knows something about them in advance, to see them for the first time is an odd experience. These swellings of the trunk and the projecting cypress "knees," as they are called, are the outcome of the effort of the tree to increase its root-aerating surface, since the ground on which they grow, being constantly covered with sluggish water, is poorly supplied with air; so the roots have to come up to breathe. On the trunks of the cypresses there was seen a most interesting fern, gray and dry at the time, easily crumbled to powder in the hand, apparently dead. But left for a few hours in water, the dry, gray leaves become moist and green, unroll, and reveal the the form of the plant, which is scarcely recognizable in the curled and crumpled ball which it becomes during the dry weather.

Here and there the water surface was covered with a dense mat of the floating aquatic fern, *Azolla*, glowing with golden autumn coloration.

One of the most primitive of liverworts, likewise an aquatic representative of a land group, *Riccia natans*, formed another colony of floating plants. The American lotus or Chinquapin, *Nelumbium luteum*, was everywhere present. Among the plant oddities, the cork-wood tree, *Leitneria floridana*, the timber of which has a specific gravity less than that of cork itself, and the sole species in its isolated family, deserves mention as a characteristic small tree of this region.

It was through this interesting nature-world, empty of men, inhabited by wild birds and animals, that our boats progressed, until turning by a lateral water-way we passed out of the comparatively open river into the very heart of the gloomy cypress swamp. On a little island, somewhere in the midst of this, fit for the home of a water-pirate, full of suggestions of wild and joyous possibilities in the way of endless adventure to the mind of any small American boy, lived the family of the canoeman—himself, a wife and two unusually interesting and attractive children. A one-roomed log cabin was kitchen, dining-room, reception-room and bed-room in turn, as the household exigencies and the hour of the day demanded. Miles and miles from help in case of sickness or death, away from schools, newspapers and taxes, free from all the burdens of society, living on the results of the good marksmanship of the father, a professional market-hunter, this kind-hearted, good-souled if unlettered family gathered its learning as it went along from nature at first hand. Many a zoölogist from a pretentious laboratory could go to school to this humble guide in the Arkansas swamps, so far as knowledge of the habits and ways of wood-folk is concerned. The Fenimore Cooper Indian's unerring recognition of the inevitable broken twig which revealed the path of the pursued was no more remarkable than this man's swift reading of the "signs" of the wild animals of his region. He was, withal, a man of character, too; one who by sheer force of example had broken up the drinking habits of a dozen other men, like him, inhabitants of the woods, and like him subject to the temptations which the Missouri side of the river offers at the settlements. One is surprised to find the Arkansas side, in that locality at least, prohibiting the sale of intoxicating liquors.

Night settled down on the swamp and the silence was only broken by the occasional cry of some wild bird or animal. One amusing incident the writer remembers: he was awakened in the morning by a vigorous scratching at the door, which he was informed was caused by the energetic efforts to enter on the part of an old hen that had always been accustomed to go to roost on the top of the food cupboard, and which was manifesting its displeasure at an unwonted interference with its established privileges.

Room is not here to tell of the interesting exploration of the

swamp, with all its fascinating wildness, but perhaps this much may serve as an account of nature and man in a quiet, remote region of great interest to the botanist, and perhaps as wild and undisturbed a place as one can expect to find in America, despite its comparative nearness to lines of transportation.

H. F. ROBERTS.

THE RIGHT TIME.

"TO everything there is a season, and a time to every purpose under the heaven." Thus spoke the prophet three thousand years ago, and yet there are multitudes of people to-day who have not learned this important truth; at least they fail to practice it. Every farmer knows the importance of time and season in planting and raising any crop. Success in farming depends on doing things at the right time.

The old prophet was wise; he was a close observer of men, and he doubtless noticed that some farmers of his acquaintance usually grew poor crops. He observed also that these farmers were careless about getting their ground plowed early in spring. When others were nearly ready to plant, they were just beginning to plow; perhaps the ground had become dry and the soil turned up lumpy and hard, making it impossible to prepare a proper seed-bed, even at the expense of much time and labor. Necessarily their corn was planted late, and because of the unfavorable seed-bed and the dry spell which occurred just about that time the corn came up slowly aud made a poor stand. Later the weather turned wet, before these farmers had their corn cultivated, and invariably they had weedy corn. Then their corn was late in maturing and frost injured it. They neglected to pick seed-corn, and being busy in catching up with other lagging work, they would not finish husking before snow fell and cold weather had set in. They saved seed-corn from the crib and planted it next spring without testing. It failed to grow, and they bought seed of a neighbor and replanted later than ever. These farmers could not get along at all; they were, as they said, always unlucky, and remained poor.

On the other hand, the prophet made the acquaintance of other farmers who nearly always seemed to have good crops, and he observed that they usually plowed the ground in the fall or early spring and had the seed-bed ready two or three weeks before it was time to plant, so that by cultivation with the harrow they

were able to kill several crops of young weeds and still plant their corn at the most favorable season on a clean, well-prepared seed-bed, with the soil in excellent tilth. They had tested their seed-corn and found it good, so that the corn came up quickly and they were able to harrow and cultivate it before the wet weather set in. These farmers always had their corn clean and the field covered with a mellow soil mulch to conserve the soil moisture. Their corn was always ripe before the heavy frosts, and they husked it fairly early, selecting their seed-corn from the field and carefully drying and storing it. These farmers were always well caught up with their work. Their farms were neat and well kept; they lived in good houses and kept their stock in good barns; they had plenty, were well-to do, and seemed to be lucky in everything, and the old prophet saw and understood that crops must be planted in their season and all work must be done at the proper time in order to gain a successful harvest and make the business pay.

A. M. TENEYCK.

The Military Department, with the approval of President Nichols, made the following promotions of officers of the College battalion last month: Cadet Capt. T. E. Dial, to cadet major; Cadet Sergt W. P. Terrel, to cadet captain, Co. E; Cadet Sergt. W. B. Banning, to cadet first lieutenant, Co. E; Cadet Sergt. F. E Balmer, to cadet second lieutenant, Co. E; Cadet E. B. Todd, to sergeant, signal detachment; Cadet L. M. Peairs, to corporal, signal detachment; Cadet J. H. Cheney, to corporal, signal detachment. To be sergeants, Co. A: H. R. Heim, J. J. Peckham, C. W. Fryhofer, H. H. Clark, G. C. Kahl, L. E. Hazen. To be corporals, Co. A: R. E. Williams, J. M. Ryan, D. C. Sullivan, C. Stewart, B. B. Baird, E. L. Shattuck. To be sergeants, Co. B: C. F. Johnson, E. F. Brandt, A. L. Larson, E. Thurston, W. R. Schenk, V. E. Hess. To be corporals, Co. B: C. J. Weaver, A. Butler, G. A. Savage, S. Pedroja. To be sergeants, Co. C: W. R. Ballard, G. L. Shirley, H. Spears, A. C. Ferris, R. C. Bowman, E. M. Myers. To be corporals, Co. C: B. S. Stewart, A. Zimmerman, L. O. Gray, L. C. Morgan, W. J. Brown, A. L. Stevenson. To be sergeants, Co. D: E. J. Evans, E. A. Cole, H. J. Kindred, W. W. Stanfield, J. W. Freeman, R. M. Monroe. To be corporals, Co. D: W. P. Shroeder, F. W. Caldwell, E. T. Pattee, C. L. Hawkinson, W. L. Davis, A. M. Townsend. To be sergeants, Co. E: L. J. Munger, W. H. Ijames, M. R. Shuler, F. O. Hassman.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The Board of Regents will meet January 27.

Professor Ten Eyck had a severe attack of the grip last week.

Doctor Mayo and family spent New Year's with friends in Junction City.

The new assistant in dairying, G. A. Menzie, of Bedford, Iowa, commenced work on Friday, January 1.

Miss Mary Yenawine has accepted a position as stenographer in the Mechanical Department at the College.

Assistant Gertrude Barnes, of the Library Department, enjoyed a short holiday vacation at her home, in Blue Rapids.

Doctor Brink will give an address before the Riley County Teachers' Association, at Keats, Saturday, January 16.

The Chemical Department has placed six new analytical balances, purchased for the use of the students in agricultural chemistry. Three of them are Staudinger No. 3 and the other three are of Eimer & Amend's manufacture.

During vacation Doctor Mayo made trips to Rock, Brookville and other places as state veterinarian, and in company with Professor Sayre, of the State University, visited Arkalon and Liberal to investigate loco disease among horses and cattle.

Prof. W. M. Hays, of the Minnesota Agricultural College, will lecture in chapel next Saturday, January 16, in the afternoon or evening, on "Wheat Improvement." The program will be announced later. The lecture will be free for everybody.

Reverend McNutt, a lecturer, who is assigned by the Ridpath Lyceum Bureau, was an interested visitor during the vacation, being detained by late trains while enroute to Lincoln, Neb., to deliver his lecture on "Dinner Pail Conditions." Mr. McNutt is a student of social conditions and an ardent advocate of industrial education.

Vernon M. Shoesmith and Elsie Mae Morrison were married on Wednesday, December 23, 1903, at Wixom, Mich. Mr. Shoesmith is the efficient assistant in the Department of Agriculture. We suspected him for some time of such intentions and now, after the deed is done, we wish the young couple a happy and prosperous journey through life. The cards state that they will be at home after March 1, in Manhattan.

Thursday morning the classes in veterinary science and diseases of farm animals made a post-mortem examination of a tuberculosous cow which had been donated for the purpose.

Professor Erf made a vacation trip to his old home in Monroeville, Ohio, and visited the World's Fair grounds at St. Louis, where he is personally interested in the dairy department as an inventor and organizer.

"The animal industry is rapidly increasing in extent and importance and the day of the skilled veterinarian is coming; but his profession must rest on a quickened public knowledge of the diseases to which animals are subject. The day of the 'horse-doctor book' is passing. Prevention, sanitation, careful handling are more important than were medication. We are coming to a rational treatment of diseases of animals, as we are of diseases in man." These sentences are from the preface of a recently published volume on "The Care of Animals," written by Dr. N. S. Mayo, of the chair of veterinary science of the Kansas State Agricultural College, and published by the well-known MacMillan Publishing Company, of New York. The book forms number 16 of the Rural Science Series. It is neatly gotten up, well bound, profusely illustrated, and contains four hundred fifty-nine pages of solid text. It deserves a place in the library of every progressive farmer and cattle man in the country, and we bespeak for it a phenomenal sale.

The following former Kansas State Agricultural College students occupy professional positions in botanical work, as teachers or experimenters: Mark A. Carleton, cerealist, Bureau of Plant Industry, Washington, D. C.; George L. Clothier, since a graduate of the Yale Forestry School, now with the United States Bureau of Forestry, Washington, D. C.; Kary C. Davis, formerly professor of botany, West Virginia Agricultural College, now principal of Rural Normal School, Menominee, Minn.; David G. Fairchild, agricultural explorer, Bureau of Plant Industry, Washington, D. C.; Ruth Mudge, instructor in botany and physiology, Girls' High School, Louisville, Ky.; Jesse B. Norton, scientific aid, laboratory of plant breeding, Bureau of Plant Industry, Washington, D. C.; John B. S. Norton, professor of botany, Maryland Agricultural College, College Park, Md.; Russell A. Oakley, scientific aid, Division of Agrostology, Bureau of Plant Industry, Washington, D. C.; Raymond H. Pond, professor of pharmaceutical botany, Northwestern University, Evanston, Ill.; Herbert F. Roberts, professor of botany, Kansas State Agricultural College, Manhattan, Kan.; Deane B. Swingle, assistant physiologist, Bureau of Plant Industry, Washington, D. C.; Walter T. Swingle, physiologist in charge of life-history investigations, Bureau of Plant Industry, Washington, D. C.; John M. Westgate, since a graduate student, University of Chicago, and now scientific aid to the Division of Agrostology, Bureau of Plant Industry, Washington, D. C.; Harry N. Whitford, assistant in botany, University of Chicago, Chicago, Ill.

At the December meeting of the Manhattan Horticultural society, the following officers were elected for 1904: President, Prof. Albert Dickens; vice presidents, Dr. A. F. Waugh and A. J. Nicholson; treasurer, T. C. Wells; secretary, J. B. Haney.

The day after the Chicago theater fire the news was spread in Manhattan that Miss Eleanor Harris, assistant in the Music Department of this College, and Miss Ruth Mudge, '01, who were known to have attended the opening of the Iroquois play-house, had become victims of the sad catastrophe. Both were saved, however, and are none the worse for the experience. They were sitting in the third row of seats from the main entrance, which made it possible for them to reach the vestibule before the gas or flames overtook them, although both were thrown to the ground repeatedly and trampled upon in the awful rush. Miss Harris was considerably singed and for some time lay at the bottom of a heap of victims, from which she was extricated by the efforts of rescuing parties. She is at her post again, while Miss Mudge, who spent her holidays in Chicago with Miss Harris, is teaching domestic science in Louisville, Ky.

The following item from the *Kansas Farmer* is one of a large number on the same subject which have appeared this winter in the leading agricultural papers of Chicago, Kansas City and the West generally. We have refrained so far from taking a public part in the controversy, but feel that an injustice has been done to C. G. Elling and the Kansas State Agricultural College. The *Kansas Farmer* says: "The contest for the famed Spoor trophy at the International has at last been decided and Iowa carries it home in permanent ownership, having been awarded it for three successive years. No doubt a protest will go up from all over the country over this action of the association, which took the matter out of the hands of the judge after he had rendered his decision and, so far as appearances go, arbitrarily reversed that decision and sent the trophy away from the real winner. It was a matter of current comment on the grounds at the International that the Kansas team of students from her State Agricultural College, although present for the first time in the history of the International, had covered themselves with glory by performing the best work and receiving the award of the judge in charge. As soon as it became known that Kansas had won, a protest was filed under the claim that there were errors in the markings of the other papers. The matter was then thrown into the hands of the association and has been held up until recently, when the decision placed Iowa at the head with a score of a few points to the good. The highest individual score as now reported was made by C. E. Howard, of Iowa, who received a credit of 80½, though C. G. Elling, of the Kansas team, was given 80¼. It is well known that Mr. Elling placed every one of the sixty animals correctly, and it will be difficult to make fair-minded men who were present believe that Kansas was not entitled to the Spoor trophy. The handling of this matter has been such as will probably prevent any such contests in the future."

At the request of the loan commissioner of the Kansas State Agricultural College, the attorney-general has undertaken the work of collecting past due bonds and defaulted interest on securities held in the College fund. The total amount due and unpaid is in the neighborhood of $10,000.

The College will be represented at the meeting of the State Board of Agriculture, to be held at Topeka, January 13 to 15, by Professor Erf, who will speak on "Selection of Dairy Cows." Professor Ten Eyck will speak to the Kansas Improved Stock Breeders' Association. President Nichols and a number of the teachers of the College will attend these meetings and take part in the discussions.

ALUMNI AND FORMER STUDENTS.

L. E. Potter, '00, is now in charge of dairying at the Indian School at Chilocco, I. T. He spent several days in visiting the College recently.

Miss Alba Woods, freshman '03, is located at 508 Eddy street, Chicago. She enjoys city life, but hopes to return in the near future and reënter College.

H. N. Whitford, '90, has been appointed botanical collector for the Philippine Islands. He begins his work in February, and it will probably occupy him two years.

Through the *Herald* we learn that Charlotte Berkey, '00, and C. F. Smith, '02, were married Christmas eve at the bride's home, in Miami county. Mr. Smith is principal of the Eldorado city schools.

Forestry and Irrigation for December contains an interesting article on Hawaiian forests, by Wm. L. Hall, '98, chief of the division of forest extension, Bureau of Forestry.

Friends of Mr. and Mrs. Chas. W. Shull, of Winona, will be pleased to learn of the arrival of a little daughter in their home Monday, December 14, 1903.—*Nationalist.* Mr. Shull is of the class of '97.

C. A. Scott, '01, is now permanently stationed at Halsey, Neb., where he is in charge of the forest reserves of Nebraska and the nursery work. One million seedling pine trees were produced in the first crop.

A. C. Smith, '97, arrived in time to spend the holidays with his wife and baby. Mrs. Smith has been visiting her parents, Dr. and Mrs. Waugh, for some months. Mr. Smith expects to work at his profession of electrical engineering in St. Louis.

F. A. Waugh, '91, professor of horticulture, Massachusetts Agricultural College, having an address to make before the State Horticultural Society, came early enough to enable him to spend Christmas with the home folks and visit the College.

O. H. Elling, '01, foreman at the Fort Hays Branch Experiment Station, made a short visit at the College recently.

Prof. H. M. Cottrell, '84, is writing a series of articles on corn selection and improvement for *Campbell's Soil Culture.* They are especially designed to interest the young folks.

Grace M. Clark, '92, registrar of Berea College, Berea, Ky., died of tuberculosis Sunday evening, January 3, 1904. She had been very low for some weeks, and welcomed the end as a happy release. Her cheerful, earnest, unselfish life will be a lasting memory and example to her friends.

Geo. L. Clothier, '92, who is in charge of the Section of Experiments in Coöperative Tree Planting, Department of Agriculture, was in town a few hours Christmas week. He was just returning from the Pecos Valley, N. M., where he had been interesting the people in the importance of forest growing to such an extent that they had ordered a half million trees.

L. S. Edwards, '03, who is now assisting Professor Otis, '92, on the Oswego ranch of the Deming Investment Company, reports successful work there. In addition to Professor and Mrs. Otis and Mr. Edwards, J. H. Criswell, '89, Belle Frisbie-Criswell, '94. and Roscoe R. Keeler, J. F. Parker, and Paul Lyman, former students, are employed on the ranch, thus making a rather numerous College company.

The following graduates of the College attended the meetings of the American Association for the Advancement of Science, or of the societies affiliated with it, held at St. Louis, December 26 to 31: S. W. Williston, '72; J. T. Willard, '83; C. L. Marlatt, '84; M. A. Carleton, '87; D. G. Fairchild, '88; F. C. Burtis, '91; C. P. Hartley, '92; Philip Fox, '97, and W. E. Mathewson, '01. The occasion was a very pleasant and profitable one, a lecture on radium, with experiments, being an especially interesting feature.

Prof. E. W. Curtis, former student and for a long time expert dairy instructor at the Kansas State Agricultural College, has been placed in charge of the hand cream separator department of the John Deere Plow Company, at Kansas City, Mo. There are few young men who know more of the minute details of the creamery business in the West than does Professor Curtis, and the great company employing him is to be congratulated on securing so able a man for this important new venture.—*Kansas Farmer.*

J. A. Conover, '98, writes from Ames, Iowa, to inform his friends "that old K. S. A. C. is grandma again, this time to an eight-pound girl which arrived at our house on the 8th of December." Mr. Conover also states that the students formerly from this College were planning to have a Christmas dinner together, given by H. M. Bainer, '00, and family. Those included would be Mr. and Mrs. Bainer, Martha Nitcher, '01, W. H. Olin, '89, and family, W. R. Hildreth, '02, A. L. Cottrell, '03, H. T. Neilsen, '03, and Laura F. Jones and Maud C. Parrish, former students.

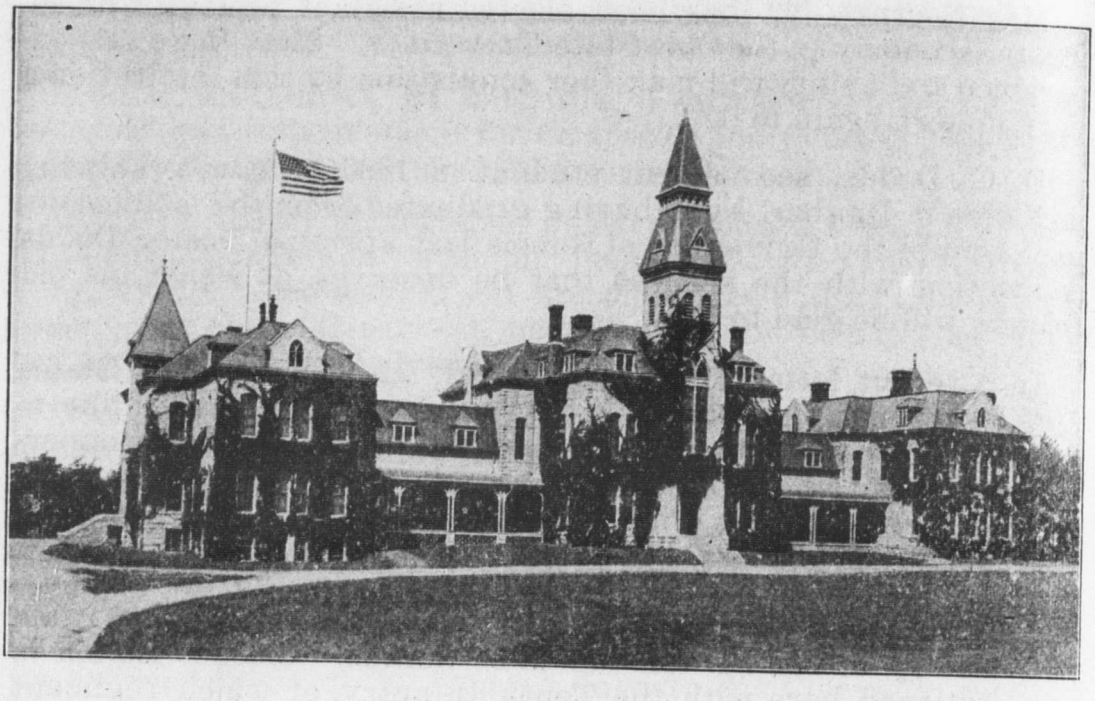
May Secrest, '92, has been elected assistant professor of domestic economy in the Ohio State University. Miss Secrest's experience and ability will make her acquisition by that institution a very material gain to it.

D. C. Dodds, second-year student in 1896, is now practicing medicine in Dunbar, Neb., having graduated from the medical department of the University of Illinois last spring. Doctor Dodds is meeting with the success that he deserves, of which his old friends will be glad to hear.

In a recent letter Maj. Albert Todd, '72, of the United States Artillery Corps, now stationed at Presidio, Cal., says: "I like to keep in touch with the College, though I seldom have the opportunity to visit it. I have been at this post about two years, after a service in the Philippines of two and a half years. I frequently see officers known to the College. Last summer Captain Nicholson passed through on his way to the Islands, and a few days since Captain Morrison was here a short time preparatory to sailing for the same station. Colonel Bolton is now stationed here with the Tenth Infantry, of which regiment Captain Helmick is also one of the officers, though now away on recruiting service at Worcester, Mass."

Robert Kimble, of Manhattan, Kan. [junior in 1900], now master electrician at Fort Totten, N. Y., is in Washington on a few days' furlough. He was at the capitol to-day and took luncheon with Representative Calderhead. Although but 21 years old and two years in the army, Mr. Kimble has reason to feel proud of his present rank. He enlisted in the Fourteenth Cavalry at Leavenworth on April 8, 1901, and was stationed with that regiment at Fort Grant, Ariz., until last July, when he was transferred to Fort Totten. At the latter place he was examined and appointed a master electrician. Although the law creating such positions has been in operation nearly two years, only six enlisted men in the army have been able to win the promotion he recently obtained.—*Washington correspondent of Topeka Capital.*

Died, in Lehi City, Utah, at midnight the close of December 13, 1903, Walter S. Harling, aged 31 years. Mr. Harling attended the State Agricultural College of Kansas, from which he graduated in 1894. In 1895 he was married to Elizabeth W. Perry. The following year he was offered and took the public school in Echo, Utah, after which he was asked to take charge of the Congregational New West Academy at Lehi. After making a success at this school for two years he was exposed to a heavy rain, which resulted in a cold from which he never recovered, and for some three years has been an invalid and has steadily declined though making a brave fight. He was not strong enough to compete with the Reaper, Death. His life has been so clean, so pure and so just that he won the esteem of all who knew him. His life was a daily sermon. He leaves a wife and three little daughters and a host of friends.—*Nationalist.*



Anderson Hall.

1904

JANUARY

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	....	....	....	....	....	....

FEBRUARY

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	....	....	....	....	....
....	....	....	....	....	....	....

MARCH

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	....	....
....	....	....	....	....	....	....

APRIL

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
....	....	....	....	....	....	....

MAY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	....	....	....	....
....	....	....	....	....	....	....

JUNE

S	M	T	W	T	F	S
....	....	....	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	....	....
....	....	....	....	....	....	....

JULY

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	....	....	....	....	....	....

AUGUST

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	....	....	....
....	....	....	....	....	....	....

SEPTEMBER

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	....
....	....	....	....	....	....	....

OCTOBER

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	....	....	....	....	....

NOVEMBER

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	....	....	....
....	....	....	....	....	....	....

DECEMBER

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
....	....	....	....	....	....	....

Historical Society

VOL. 30 NO. 14

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K. S. A. C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K. S. A. C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K. S. A. C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K. S. A. C.) ..... Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K. S. A. C.) ..... Secretary

JACOB LUND, M.S. (K. S. A. C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K. S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K. S. A. C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K. S. A. C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K. S. A. C.) ..... Assistant in Music
William Anderson, B.S. (K. S. A. C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K. S. A. C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K. S. A. C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N. H. C. A. & M. A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K. S. A. C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo. C. Wheeler, B.S. (K. S. A. C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K. S. A. C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Sumner M. Manley, S.B. (Mass. Inst. Tech.) ..... Assistant in Mechanical Engineering
James Cran ..... Foreman of Blacksmithing
Miss C. Jeanette Perry, B.S. (K. S. A. C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K. S. A. C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K. S. A. C.) ..... Bookkeeper
Miss Mamie Alexander, B.S. (K. S. A. C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K. S. A. C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., JANUARY 19, 1904. NO. 14

AGRICULTURE IN THE AGRICULTURAL COLLEGE.

A YEAR or so ago there was some public criticism of the management of the Agricultural College, regarding the attention and support which agriculture was receiving. After a year's connection with the College, in charge of the Farm Department, it is the opinion of the writer that there was much injustice in the criticisms which were made. It is right and proper that all departments in the College should receive equal support and development, and in order that agriculture may reach that high standard which it deserves the farmers of the State must stand unanimously for the Agricultural College and give it their generous and intelligent support. I have found the President and Board of Regents willing to do all that can be done with the means at hand to improve and develop the agricultural work, both in the College and Experiment Station. The funds available are only sufficient to begin some of the developments desired. Some improvements have been made—the dairy barn was completed last winter, a full line of modern farm machinery was purchased during the summer, an ample machinery shed has been provided by remodeling a part of the basement of the barn, several fine farm teams have been purchased, new fences are being built about the yards and fields, and so far as funds permit new equipment and apparatus is being provided for the agricultural laboratories and class rooms, and also for the Experiment Station work.

Last spring the course of study was revised and the course in Agriculture was strengthened by the introduction of several new or advanced studies. The course in Agriculture was by no means a weak one as it was, and I believe that I am not exaggerating when I say that with possibly one or two exceptions the course which has been adopted is as strong and as well balanced a course as is given in any other agricultural college. But in order to teach to the best advantage the studies of the revised course, the

Agricultural Departments must be supplied with more room, more and better equipment and apparatus, and more instructors. Granted that the legislature was liberal in its appropriations last winter, yet in order to properly develop the agricultural work the funds appropriated for this purpose were insufficient, and are in fact far less than other leading agricultural colleges are receiving for similar work.

It takes lots of money to run the largest institution of its kind in the United States as it ought to be run. To properly care for fifteen hundred students and look after the administrative and clerical work of the different departments requires a small army of professors, instructors, and assistants, and all of the employees of the College are kept busy and hard at work and no time or money is wasted in carrying on the work of the College and Experiment Station. I have been intimately connected with three other great institutions of its kind (agricultural colleges of Wisconsin, Colorado and North Dakota), either as a student or instructor, and have a passing acquaintance with several other agricultural colleges, and I state a fact when I say that the members of the Faculty, assistants, employees, yes, and the students, of the Kansas State Agricultural College work harder and longer hours than is the practice in any of the colleges with which I am acquainted. The large number of students in each class make teaching work especially heavy. On the other hand, the students are indispensable in carrying on the work of the institution. For my own part I would say that it would be impossible to do the work of the Farm Department without the student help, and it is cheap help, too—cheap in the truest sense of giving valuable service for small pay. Much of the work which students do in the Farm Department could not be hired done by outside labor for double the ten cents an hour which we are allowed to pay for student labor. Criticisers of this system should not lose sight of the fact that the students are being benefited by the training which they receive in doing this work, and it also enables them to pay a part of their expenses. In this way many students are kept in College who could not otherwise attend.

Notwithstanding the apparently liberal appropriations for the Agricultural College which the State has made, the needs and requirements are continually increasing faster than they are being supplied. The College is building a dairy building and a chapel

from the appropriation of the last legislature; but other buildings are needed almost as badly. Within the next year the Farm Department and those connected with it need and could make good use of buildings and equipment for which no money was appropriated, as follows: A wing to Agricultural Hall (to get more room for needed laboratories and class rooms and for an agricultural museum); a stock-judging pavilion; a horticultural building; a veterinary building; a large forage barn and horse stable (forage for all stock is stacked out of doors at present); a seed house (the College has no appropriate place to store seed grain); a feed- and fodder-storage barn for the dairy herd; and more and better equipment for teaching and experiment work in all of these departments.

The College needs more land. The money appropriated did not buy half enough. More than half the land which was cropped last season was rented. It is very unsatisfactory to carry on experiments on rented land, and the experiment work ought not to be hampered. The work of the Experiment Station is or ought to be of great value to every farmer in Kansas. This part of our institution is sadly neglected by our legislature. The Experiment Station receives $15,000 a year from the United States government, and nothing from the State. In the matter of building up the Experiment Station, Kansas is behind many other States.

The Experiment Station is the farmers' school, and the flood of letters received daily asking for advice and information on questions of farm practice and on stock and dairy farming should convince anyone that it has a mission to perform. New diseases are appearing in the fields and in the flocks and herds. New problems in stock feeding, crop rotation, tillage and soil moisture conservation are appearing every year. The work of the Experiment Station is to aid the farmers in solving these various and perplexing problems in agriculture which are continually arising, and also to aid in the development and distribution of improved seed-corn and seed grain. "Millions of dollars are saved to the farmers every year by the experiments and discoveries of the Experiment Station." Says the Minneapolis *Journal* of March 1, 1903: "In the single item of 'Flax Wilt' (a disease of flax discovered by Prof. L. H. Bolley, of the North Dakota Experiment Station), the money value to the farmer will be more than

$5,000,000, the annual cost of the entire Department of Agriculture in the United States."

The Kansas Station has done some valuable and excellent work which the farmers ought to and doubtless do appreciate. The bulletins lately issued on Stock Feeding, Alfalfa and Balanced Rations ought to be in the hands of every farmer, but the tendency perhaps has been in recent years, because of the press of teaching work demanded by the large body of students and the lack of funds and poor equipment, to neglect the Station work in some lines.

The farmers of Kansas will be granted any reasonable request which they may ask from the State legislature. If you want the Experiment Station developed, ask your representatives in the legislature to see that money is appropriated for that purpose. If you want the Agricultural Departments of the College to have more buildings, better equipment and more teaching force, bring this matter to the attention of our legislators. It is not the fault of the Board of Regents and the authorities of the College that the Agricultural Departments are in want of many necessary things. It is mainly the fault of the farmers of Kansas, who may not know the wants of the institution but should know, and often knowing its needs they fail to support the College as they should. It is hoped that this College may work in unison with the farmers and have their hearty support in building up the agricultural industries of this great State.

A. M. TEN EYCK.

THE PSYCHOLOGY OF REFORM.

"CAN the Ethiopian change his skin or the leopard his spots?" Although this question is as old as the hills, in its figurative sense it is still pertinent. Can a man change his character definitely and permanently so that the tendency to act in the old way will no more recur? It is reasonable to suppose that several millions of the people of this country began the year 1904 with some form of resolution looking toward reform of their characters. What are their probabilities of success?

In the first place, it will be agreed, the answer to this question depends very much upon the age of the person concerned. When one has reached mental and physical maturity his character tends to become more and more fixed. New ideas come to him less readily and remain with him less permanently. He may conduct

himself in a new way for a short time, but the tendency is to fall back into the old rut. Every kind of observation on the subject and every manner of introspective evidence seems to give testimony to the effect that the best time to reform character is during childhood.

The fact is, we are inclined to take rather too much personal credit for what we are and what we can achieve. It can likely be shown that the foundation and much of the superstructure of our characters were constructed before we became aware of the higher purposes of life. Nay, more than that, many of the more stable qualities of our natures are the result of a slow process of evolution dating back many generations.

In the case of some children, it can easily be shown that by persistent drill a new mode of response can be formed and an old one eradicated. In other instances, wherein the tendency to act in a specific way is an inherited one, the change is more difficult. Modern science has shown pretty conclusively that every physical act is presided over by a specific portion of the brain. For example, there is a brain center for the movements of the right hand and another for those of the left. If the latter is more highly developed at birth, the child is naturally left-handed, and this tendency will likely never be overcome. Much training may make the child right-handed, but he will never be so skillful and proficient in executing right-hand movements as he would have been, after the same training, in executing left-hand movements.

It is high time we were recognizing the fact that reformation of character means, to a certain extent, a reforming of the brain mass, and, at times, of the whole nervous mechanism. There is no difference in principle and fundamental method between a case of breaking a child of left-handedness and breaking him of some immoral habit, say lying or stealing. In each case there is, correlated with the habituated action, a highly developed brain center, and the mechanical side of the reforming process is that of annulling the effects of this center by disuse and developing another to take its place. Then, for the sake of simplicity, let the case of left-handedness represent them all. You ask a left-handed boy, whom you are trying to break of the habit, to throw a ball. What is the detailed process for him. There is (1) the usual idea of the movement, (2) the impulse to throw with the left hand, (3) the inhibition or check of this impulse, (4) the idea of

throwing with the right hand, (5) the impulse so to act, (6) the action as a result.

Now, while the foregoing complex process may occur all within a second or two, the fact and manner of its occurring indicates the nature of the reconstruction necessary before the reform is even relatively complete. The brain center for left-handedness must be kept dormant by constant inhibitions of its natural processes, while that for right-handedness is built up by constant practice. It is a slow, tedious operation, even in the case of the child, whose brain mass is still plastic, and an almost hopeless one in the case of an adult.

All this discussion seems to offer scant encouragement to the several millions of mortals who, on New Year's day, honestly and faithfully resolve to reform. However, there is still some hope; but the individual must act emotionally as well as intellectually. While he is most deeply under conviction as to the error of his way, and feels most powerfully the force of the new resolution he is forming, an examination would show that strong emotion is actually in process.

The life forces feel warm and strong, many of the muscles of the body have an unwonted fixity, and the countenance has an unusually firm aspect. At this time the blood is doubtless flowing with unusual force through certain of the brain regions. This is the feeling that is desired as permanent. "Strike while the emotional iron is hot!" is the rule laid down by the psychologist. The self-reformer has to work against great odds; and, if he is to succeed in forming the new habit and destroying the old one, he must be both faithful and persistent. Suppose the case of a habitual drinker of intoxicants trying to reform. He must persistently image (think of) himself in the performance of acts of sobriety and abstinence, and at the same time refuse positively to think about the old act.

The last clause needs fuller treatment. While an open confession may be good for the soul, a repetition of it is exceedingly bad for the reform. Many fail here through ignorance of the law. After the new mode of conduct is adopted, they keep up a morbid practice of relating the old evil experiences. Many a religious convert makes this form of error by repeatedly giving a detailed account of his past sins. He thus prepares the way for easy and natural "back sliding" by keeping alive the old tendency to do evil.

An almost absolute essential for the self-reformer is that he strive in every way to continue to be emotional with reference to his new form of conduct. Let him indulge every impulse to act in its behalf. Let him talk much of it, meditate upon it, quote poetry and sing songs about it, connect it in thought, with every beautiful sentiment possible and with every mode of inspiring conduct imaginable. In short, let him become passionately fond of and thoroughly imbued with his new idea and it will naturally work itself out in his character. WM. A. MCKEEVER.

JUST LITTLE THINGS.

IN these days of wonderful accomplishments, along the lines of human efforts, we become accustomed to think only of the great achievements, the large enterprises and the big things, and are apt to forget the little things which concern us most. We read of gigantic combinations of capital that are able not only to control manufactures, mining and commerce, but to influence to a great extent the policies of our government itself. We read of wonderful discoveries in the sciences, and of still more wonderful achievements in the arts, and almost feel that we also must accomplish something equally great or life with us would be a failure. The greater the feat we perform the stronger becomes our desire to do things still more wonderful. Thus we allow ourselves to be led on, to wrestle with problems of life not yet suitable and too intricate for the immediate use of the public, until our energies are exhausted, our time wasted, and our efforts unsuccessful.

There has been a great revolution in all lines of mechanics, sciences, and especially those related to agriculture, in the past, and thus the world goes from great things to greater; but let it be understood that there is no disposition to find fault with ambition and the spirit of progress provided good judgment and pure motives are allowed to guide and direct us. Many a nation is known only in history because of its misguided ambition, and many a farmer once comfortably situated has lost all by mortgaging a small farm in order to rent a larger one.

"Let our aims in life be high," is a motto often quoted, and its age if nothing else secures for it consideration and respect; but we should be very careful not to aim higher than the game to be secured, or at something that is beyond the range of the gun we

shoot with. The best trained soldiers, we are told, aim low. We have our ideal placed very high on the mountain side, but the path that leads to it lies along the ground, and many are the pitfalls and little difficulties to be met and overcome before we can reach our desired point. In other words, let us not think so much of the end sought that we lose sight of the many little things that enable us to gain that end.

I believe we sometimes get the big, round dollars so close before our eyes that they completely shut off our view of the many little nickels and dimes that might be so much more easily secured. All great structures are composed of separate parts; many of them perhaps may be very small, but each part, however insignificant it may appear when alone, is just as essential in its way as any other part of the whole edifice.

In fact, there are hardly any things of importance that are not little things. Plants grow from cells. These kind of cells require the largest microscope to see them, yet these cells added together at last make the gigantic tree which sometimes reaches the height of four hundred feet.

The frost scales off tiny particles of stone; the rain carries these tiny grains to the creek, the creek bears them to the river. These grains of sand rasp loose from the earth and stone; other grains thus in turn loosen still other particles, and finally form streams and channels; the river hurries them to the sea; they form valleys and mighty canyons; the sea spreads them out in layers, and some day the fine mountain range from which the water flows has become the bed of the gulf. All this is done by little things.

It takes the care of little things to make big ones. So it is in nearly every undertaking in the magnitude of life, and especially is this true in the life of the farmer. He may form his plans as carefully as any one could, but unforeseen change in the season, some insect enemy or, perhaps, a little mistake on his part may ruin all. A farmer may prepare an excellent seed-bed; he may spend much time and expense in preparing his bed, yet by using a very poor seed he will not develop a crop.

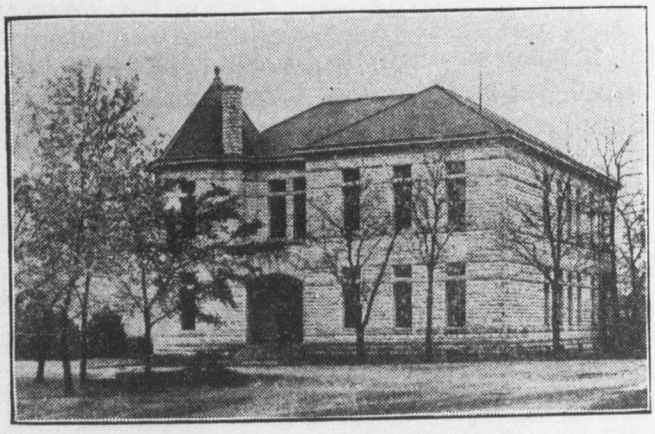
Perhaps we are too often taught that it does not pay to take care of little things, and I presume that too many people believe that the important thing to consider is the occupation of making money.

There are many little things which are often regarded as unimportant, such as keeping things in order, keeping the yard clean, saving of little wastes of feed, keeping fields clean, having good, well-repaired fences, and keeping stables in sanitary condition, yet all of these not only contribute to the enjoyment of life, but also are a real profit to man and beast as well. Doubtless, you may argue that while all these little things may be nice and desirable, they all require more or less time and labor to produce. Indeed they do, for we know that there is no excellency without great labor. The farmer who has his work systematized as it should be will usually have time to look after many little things as they present themselves, and to give to each in turn the attention its importance demands. "Plan your work and work your plan," is a grand motto to be remembered, and to follow in any business; saves you time, trouble, and leads to greater success.

Our failure to reach a greater degree of success than most of us do is not caused so much by the lack of knowledge as by a failure to properly apply what knowledge we already possess. Knowledge simply lines the power, or shows the way, but execution brings results. If ignorance can be charged for the loss of ten millions, negligence must be held responsible for the loss of hundreds of millions.

Let us learn, while at College, to apply properly and practically the sciences that are taught, not to lose sight of or despise the little things, as well as learn new facts.

OSCAR ERF.



Kedzie (Domestic Science) Hall.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The carpenter-shop is remodeling the gun racks of the Military Department.

Professor Erf read two papers before the agricultural societies at Topeka, last week.

Foreman Wabnitz, of the machine-shop, was on the sick list last week, suffering from a severe cold.

The machine-shop is repairing a twenty horse-power Witte gasoline engine, belonging to the Doctor Robinson estate.

Assistant Professor Paul, of the Mechanical Department, was on the sick list for several days last week, nursing an ulcerated tooth.

President Nichols was at Topeka during the past week attending the annual state meetings of the agriculturists, stockbreeders and dairymen.

The fourth-year mechanical engineers are making an extended series of experiments with natural and Portland cements from various parts of the country.

Doctor Mayo attended the annual meeting of the State Board of Agriculture, in Topeka, Thursday and assisted in organizing an association of veterinarians of the State.

The Printing Department has lately added about five hundred pounds of new type. It became necessary to add this type to keep up with the increasing demands upon the department.

The College farmers' club held its regular meeting of last week in the chapel, on Friday night, and listened to a special program, which included addresses by Professors Ten Eyck and Webster.

Two engine foundations have been built by students and apprentices in the mechanical engineering laboratory of different cements. Observations will be made from time to time to determine the better of the two mixtures for this purpose.

Prof. W. M. Hays, of the Minnesota Agricultural College, lectured in the College chapel Saturday evening last on "Wheat Improvement." The chapel was comfortably filled with an appreciative audience. The College band furnished music for the occasion, and from the hearty and prolonged applause one would surmise that the music, also, was appreciated.

Doctor Mayo was away last Saturday and Sunday, in southwestern Kansas, on live stock sanitary work.

One of the horses of the College teams gained ninety pounds during the past month, though the animal was used in the harness every day and received no special feed or care.

On Monday, January 4, the colored citizens of Manhattan dedicated their new two-room schoolhouse, with a program consisting of music and addresses. Professor Walters spoke to them of "The Problems of Industrial Education and the Colored Race."

Nobody could walk a block on Poyntz avenue and not observe that College is again in session. The professors who have charge of assignments are very forcibly impressed with the fact that Kansas boys and girls seeking an education are very numerous.

The Department of Animal Husbandry has lately completed the fencing of eight feed lots and an equal number of hog lots. Four large piggeries have been built, the fences have been whitewashed, the gates have been repaired, and things cleaned up in general.

Senior Student R. S. Wilson is conducting an interesting experiment for the College, with six lots of shoats. The object is to determine the value of cotton-seed meal if fed for a considerable length of time. The experiment will form the basis of his graduation thesis next June.

Contractor W. W. Cook, of Junction City, has commenced the drilling of a test hole near the main entrance to the College grounds, to ascertain if water of good quality and sufficient quantity can be had for the new College water-works provided for by an act of the Legislature.

The instruction in stock judging is going on as advertised at the beginning of the winter term. The first two weeks were given to the study of sheep. Next week the classes will take up the judging of hogs. Then will follow one week's work with poultry, two weeks of horse and mule judging, and the remainder of the term will be given to dairy and beef cattle. In place of the usual beef demonstration, the professors will take the class to Kansas City and show them the methods of selling, handling, killing and packing of animals in the great packing-houses.

The Animal Husbandry Department has lately purchased a shorthorn steer that will probably become a phenomenal specimen of the bovine race when he is fully matured and developed. He was raised by Fred Otto, of Riley, and has had no special care of any kind, yet he measures nearly six feet in height and weighs twenty-nine hundred pounds. It is the intention to feed him out to his full capacity and limit, as a feeding study, and probably to exhibit him at the Louisiana Purchase Exposition. The department believes that he may be made to weigh at least thirty-five hundred pounds by next summer.

The output of the College creamery for the present month is about six hundred pounds of butter per week. A part of the milk is furnished by about ten patrons, but much is produced by the College dairy herd. The butter is readily sold in the local market.

The Department of Animal Husbandry has lately commenced a steer-feeding experiment that will be of general interest. Two lots of Angus steers, ten in each lot, are being fed. One lot gets corn and alfalfa hay, the other gets corn and a variety of rough feed, consisting of shreded corn-stover and Kafir corn, tame hay, and timothy. The object of the experiment is to determine the value of variety in roughness as compared with the steady alfalfa ration. The results will probably be published in May.

Died, on January 12, 1904, at the home of her daughter, Mrs. Charles H. Kirshner, 3605 Oak street, Kansas City, Mo., Mrs. George T. Fairchild. The remains were taken to Berea, Ky., where Doctor Fairchild is buried. On account of the illness of Mrs. Kirshner, the funeral services in Kansas City were private. Mrs. Fairchild was the widow of the former President of the Kansas State Agricultural College. She went to Kansas City last autumn to make her home with her daughter. Mrs. Fairchild lived in Manhattan for seventeen years and is remembered by the students and citizens as a kind-hearted, motherly woman—an exemplary character in every respect.

The Manhattan Horticultural Society will meet in Horticultural Hall, at this College, on Thursday afternoon, January 21. The program will include a paper on "The Chemical Value of Fruit as Food," by Prof. J. T. Willard, and an address on "Planning the Year for Horticulture," by the secretary of the State Horticultural Society, W. H. Barnes. Sending his acceptance the latter writes: "I will probably talk along the line of 'Planning the Year for Horticulture,' taking in the vegetable gardener, the small fruit cultivator, the orchadist, the florist, and ornamental work in shade-trees and lawns. Will take in both commercial and amateur work." Everybody is invited.

The truth of the statement in the daily papers, that one J. Q. Beal, of Wellington, is probably the only man in Kansas whose grandfather was a revolutionary hero is disproven by the record given below: Prof. B. S. McFarland, principal of the Preparatory Department of the Kansas State Agricultural College, had two grandfathers in the revolutionary war. Charles Dorsey, of Ellicott, Md., served three years in the war for independence and was wounded at the battle of Brandywine. His daughter, Eunice, was born during the last years of Washington's administration. William McFarland, of East Pennesborough, Cumberland county, Pennsylvania, was enlisted for one year in the same service. His oldest son, Robert, was born twenty-one months before the treaty acknowledging the independence of the United States was signed. Robert McFarland and Eunice Dorsey became husband and wife. Professor McFarland is the youngest son of this marriage.

ALUMNI AND FORMER STUDENTS.

Miss Nettie McLaren, '00, was married January 7, 1904, at her home near Altoona, Kan., to Mr. Solon F. Scott of that place.

Glen Shepherd, '02, is now treasurer of the Orpheum theater, in Kansas City. He always was of a theatrical turn, and as for handling the cash, Glen can do that admirably.—*Students' Herald.*

J. H. Blachly, '00, has gone to Orange, La., where he will run an engine in a sawmill. Mr. Blachly will work under Ed. Hutto, of Manhattan, who recently went to Louisiana to take charge of a logging camp.—*Student's Herald.*

A. K. Midgley, '91, according to the College catalogue, is a clerk at Minneapolis. This, however, is erroneous. Mr. Midgley for several years past has been in charge of the Kansas Lumber Company's yards at Delphos, Kan.—*Students' Herald.*

Geo. W. Owens, '99, writes of his success in teaching the science and practice of agriculture at the Tuskegee Normal Institute. He has some flattering prospects for advancement. He says that no institution is looked upon as a higher standard of authority than this is.

The hundreds of friends of G. H. Failyer, '77, will be glad to learn that his value as a chemist in the Bureau of Soils, United States Department of Agriculture, has been recognized by another substantial promotion, with corresponding increase in responsibility and salary.

Dr. W. A. McCullough ['98] came Friday to remain here and establish a practice. He has rented the north room over the First National Bank, recently occupied by Doctor Robinson. He is a young man of good ability and comes well recommended in his profession.—*Nationalist.*

Ed. H. Webster, '96, inspector and dairy expert, United States Department of Agriculture, and formerly professor of dairying here, has accepted a position as manager of the Littleton Creamery Company. He will be in charge of the factory work in Denver and western Nebraska and will make his residence in Denver. He begins his new duties March 1. During the year that he has been connected with the Department of Agriculture, Mr. Webster has made a number of interesting and important investigations, and it is to be regretted that the department is losing such a good man.

The following good items sent in anonymously some time since have found themselves after being mislaid by the editor:

Ted W. Morse, '95, has been promoted by the paper for which he has been traveling editor the past three years, *The Live Stock Indicator*, and now has a position in the Kansas City office of the same, in the Century Building, Kansas City, Mo. Ted is a hustler and is making a success in his chosen profession.

E. L. Pound, who was a student at K. S. A. C. in the latter part of the 80's, and who for the past four years has been chief clerk of the Metropolitan street railway in Kansas City, Mo., has accepted an important position at Denver, Colo., with the Studebaker Bros. Manufacturing Company, and has moved with his family to that city.

H. G. Pope, '94, and wife, of 3510 East Tenth Street, Kansas City, Mo., are the proud parents of a boy, born August 24, 1903. Mr. Pope is engaged in the practice of the law with L. F. Bird, a student of K. S. A. C. in the latter part of the 70's, under the firm name of Bird and Pope, 305-307 Massachusetts Building, Kansas City, Mo. The firm is enjoying a good practice.

Jennie Selby and sister, Bessie Selby, students in the 90's, have positions this year in the Kansas City, Mo., ward schools as teachers. Miss Jennie Selby has held a position as teacher in the Emerson School for the past three years, while this is the first year of Miss Bessie Selby in the Kansas City schools Miss Bessie Selby is living with her sister, Mrs. Belle Selby-Curtice, '82, at the Hotel Washington.

Dr. Ernest D. Williams, student in the early '90's, and wife, Lillian St. John-Williams, '91, were in the worst of the flood district of the June flood that devasted the city of Armourdale, Kan., the past summer, but fortunately they were living in the second story of a brick office building, and the waters just missed getting into their apartments. Although thousands of homes were destroyed around them, the Doctor and his wife have bravely stuck to their post since said time. The Doctor has built up a splendid practice since moving to Armourdale some three years ago.

William E. Smith, '93, is associated in the practice of law with I. N. Watson, attorney for the Union Pacific railroad, 814 New York Life building, Kansas City, Mo. Mr. Smith has built up a lucrative business since moving to Kansas City, and holds the important position of secretary of the Kansas City Bar Association. Mr. Smith has gained quite a reputation as an entertainment manager in the past two years, as can be testified to by members of the K. S. A. C. alumni who attended the banquet at the Midland Hotel last winter, in Kansas City. He makes a genial host.

Carl D. Adams, '95, and wife lost their home and nearly all their belongings in the flood of last June, at Armourdale, Kan., and barely escaped with their lives. Their house was lifted from its foundations at night and floated several hundred feet and destroyed, with other houses of the vicinity. Mr. Adams, who has a position with the Swift Packing Company, had nearly finished paying for said home when the flood came. The house was one that had been built and occupied for about a year by Myron Limbocker, '95. Mr. and Mrs. Adams are now residing on Brooklyn Avenue, Kansas City, Mo.

Historical Society

VOL. 30 NO. 15

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - *PRES. E. R. NICHOLS*
Local Editor, - - *PROF. J. D. WALTERS*
Alumni Editor, - *PROF. J. T. WILLARD*

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K. S. A. C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Oratory
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K. S. A. C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K. S. A. C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K. S. A. C.) ..... Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K. S. A. C.) ..... Secretary

JACOB LUND, M.S. (K. S. A. C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K. S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K. S. A. C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K. S. A. C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K. S. A. C.) ..... Assistant in Music
William Anderson, B.S. (K. S. A. C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K. S. A. C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K. S. A. C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N. H. C. A. & M. A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K. S. A. C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo. C. Wheeler, B.S. (K. S. A. C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K. S. A. C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Sumner M. Manley, S.B. (Mass. Inst. Tech.) ..... Assistant in Mechanical Engineering
James Cran ..... Foreman of Blacksmithing
Miss C. Jeanette Perry, B.S. (K. S. A. C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K. S. A. C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K. S. A. C.) ..... Bookkeeper
Miss Mamie Alexander, B.S. (K. S. A. C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K. S. A. C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., JANUARY 26, 1904. NO. 15

THE MOUND-BUILDING PRAIRIE ANT (*Pogonomyrmex occidentalis*).*

OF ALL the insects none are more familiar to us than ants. They are found in all countries; they establish their communities in the immediate vicinity of many dwellings, and some of them even invade the habitations of man. Their intelligence, industry and perseverance have attracted the attention and admiration of the most serious men. Even in remote ages, such men as Solomon did not hesitate to state that these little creatures were worthy of imitation. In Proverbs 6: 6-8, we find the following familiar words: "Go to the ant, thou sluggard; consider her ways, and be wise; which having no guide, overseer, or ruler, provideth her meat in the summer, and gathereth her food in the harvest."

Structurally they rank among the highest of the insects. In efficiency they are second to none. They have acquired the art of living together in societies more perfectly than our own species. Their time and labor are devoted to the welfare of the colony, rather than to that of the individual.

Crossing the prairies of Central and Western Kansas, the traveler's interest and attention are attracted to the gravel-covered cones, which skirt the railroad on either side. Located in the center of a circular cleared space, they stand out very prominently to break the monotony of the grass-covered plains. The industry of these little workers has dotted the prairies with their formicaries. Their mounds are conspicuous along the slopes of a ravine. Their domiciles are located in the little nooks and flats between cliffs and ridges and along the streams. The ants are found persistently clinging to their home in the traveled street and along the crowded sidewalk. They assert their presence in the front yard, at the doorstep, and in the trodden path. They adapt themselves to the abnormal environments of a barnyard. They cling to their nest, and establish their clearing in the wheat and alfalfa fields, regard-

*Adapted by permission of Experiment Station, from advance sheets of bulletin.

less of the plowing, disking, and cultivation. The farmer hates them; animals avoid their formicaries; birds and fowls do not molest them. On the other hand, the naturalist admires their industry, wonders at their pertinacity, and enjoys studying their habits.

The form of the mound is usually that of an elliptical cone, although several of them are symmetrical. The cones are of various sizes and heights, depending on the age, size and location

EXTERIOR MEASUREMENTS OF NEST.

Number.....	Height.....	Long slope.....	Short slope	Major diameter at base.....	Minor diameter at base.....	Diameter of cleared space..	Location of mound in cleared space.
1.....	13*	27	24	44	40	126	Center.
2.....	11	24	24	42	36	90	Center.
3.....	12	36	24	66	44	168	Center.
4.....	9	20	20	39	39	132 x 108	West side of clearing.
5.....	8	36	22	66	43	144	West side of clearing.
6.....	10	24	21	48	36	108	Center.
7.....	16	46	34	78	78	144	Center.
8.....	9	28	16	45	36	120 x 96	Center.
9.....	9	24	24	44	44	180	Center.
10.....	8	15	15	24	24	132	Center.
11.....	9	23	18	44	36	90	Center.
12.....	9.5	27	27	48	48	132 x 144	Center.
13.....	11	22	22	52	34	132	Center.
14.....	11	30	20	51	40	120	Center.
15.....	9	29	17	48	36	144 x 84	Center.
16.....	9	27	17	48	38	120 x 96	One foot from edge of clearing.
17.....	9	21	21	41	41	114 x 96	West side of clearing.

*All measurements are in inches.

of the colony. Of those measured in the grass on the prairies, the prevailing height was about nine inches, while those located in an alfalfa field, in Ellis county, Kansas, were about four inches in height. The mound is made very prominent by the cleared space, by which it is surrounded. This clearing is usually circular in form, although it may be somewhat elliptical. The mound is usually located in the center of the clearing, which is always absolutely void of vegetation. The size of this clearing depends on the size of the mound and the nature of the surrounding vegetation. Those found in the buffalo-grass are much smaller than those in a cultivated field. A large nest may be found with a comparatively small clearing; however, this is not common. The clearings, surrounding the nests located in the buffalo-grass, averaged nine feet; those in the Russian thistles, eleven feet; those in an alfalfa field, thirteen to fourteen feet. This clearing is usually smooth and level. These ants, like most mound-building

species of ants, have a dislike to the presence of vegetation in the immediate vicinity of their mound.

The clearing away of the vegetation is accomplished by the workers, cutting it away with their mandibles, which are well adapted for the purpose of such work. We may assume several reasons why the ants wish to have a cleared space. The plants, too near the nest, would be a hindrance to their going and coming. They would afford a shelter or hiding place for any enemy or intruder. Vegetation would endanger the nest by the retention of moisture after a rain. The nest would be seriously damaged by the roots of any plants growing near, as the roots would penetrate the underground galleries and chambers. Water, after a rain, would follow down the roots and destroy the nest.

The mounds are covered with any surrounding available material, such as pebbles, gravel, cinders, and dirt pellets. Along the railroads they are covered with cinders, bits of coal, and ballast. Many of the mounds on the townsite at Wallace, Kan., were covered with bits of glass, mortar, nails, etc., this material being available on account of many of the houses having been torn down. True, some of the covering material is brought up from below, as they are excavating for the underground galleries and chambers. However, the most of it is gathered out around the nest, as it is of the nature of the surrounding material. The purpose of this gravelly covering is to protect the mound from the outside elements, such as rain and wind. The slope of the mound is usually as steep as the gravelly covering will permit. This covering is from one-half to one inch thick.

It is surprising with what ease these ants will handle the pebbles, which they seize with their outstretched mandibles, and carry, over the rough pebbles, to the very summit of the mound without once stopping to rest. Some of the pebbles are at least eight times the weight of the ant carrying it. Yet, with the head elevated, and holding the pebble well to the front, the little worker carries the burden to the desired place, somewhere on the surface of the mound. They work entirely without the assistance of another. Many times a worker, after working hard and long to carry a pebble, finds, on reaching the mound, that the load is too heavy with which to ascend. While she is working away with the pebble at the base of the mound, other ants pass within touching distance, but never stop to assist, or even to ascertain what the

trouble is. And thus, the disappointed ant must leave the precious pebble at the base of the mound.

Many of the cones have just the single opening, while others have two, and three. One exceptionally large one had as many as eight. The position of the gates is usually about one-third of the distance from the base of the mound to the summit. There

NUMBER, DIRECTION AND POSITION OF GATES.

Number.	No. of gates.	Direction.	Distance from base.
1	1	S.	12
2	1	E.	11
3	1	E.	8
4	1	NE.	7
5	5	N., E., SE, SW., S.	2, 3, 4, 3, 6
6	3	SW., E., N.	6, 4, 5
7	8	N., NW., SW., S. S., SE., E., NE.	8, 6, 14, 16 16, 14, 12, 8
8	3	S., W., SE.	2, 2, 2
9	1	E.	13
10	1	S.	5
11	1	E.	8
12	2	SE., SW.	6, 12
13	2	NE., S.	7, 12
14	2	N., SE.	6, 4
15	1	SE.	8
16	1	E.	9
17	2	N., S.	, 6

is no uniformity in regard to the direction of the gates. However, the tendency seems to be to the east, southeast, and south. These gates, which are funnel-shaped openings through the gravelly covering, extend downward a short distance and communicate with the galleries and chambers found in the interior of the mound, and even several feet beneath the mound. The gates are opened and closed every morning and evening, the time varying with the season of the year. In the summer they are usually opened between eight and nine o'clock. They begin closing them a short time before sunset, usually having them closed before darkness comes on. There seems to be only a small force engaged at this work. The material used for closing is the same as that used for the covering of the mound. So perfectly are they closed that even close observation does not detect the place. The gates are also closed if a storm is threatening, the force at work being larger and more active. Especially is this true if the storm is fast approaching. As soon as the gates are opened the working force is out and soon busily engaged with the work. However, they again return to the formicary for their nooning, not coming

out to resume their work until the midday fervor of the sun has passed. If the day is a cool, cloudy one, they do not stop for the noon. It does not follow that the ants are not working because the field work has ceased at the noon hour. The interior work of the nest certainly requires very much time and labor, and this work is probably in operation during the noon hours, and especially in the morning before the gates are opened.

Beneath the gravelly roofing of the mound is the natural soil, of which the remainder of the mound is composed. The most of this has been brought from below, being the soil removed for the underground galleries. This soil is firmly cemeted together, forming a hard and almost rain-proof covering. The galleries, into which the gates open, communicate with the galleries, store rooms, and living-rooms within the mound, and directly beneath the mound. The subterranean galleries and chambers are so numerous in many of the mounds that they are simply honey-combed. This is particularly true in that half of the mound next to the external opening. The chambers with their low, arched ceilings and level floors, are of various sizes, being from one to three inches long, and from one-half to one inch high. The chambers are connected by galleries of various lengths, about three-eighths of an inch in diameter, and, beyond the first three or four inches below the base of the mound, they are not so numerous, or close together, many of them here being six inches or more apart. I found these galleries and chambers penetrating the earth to the distance of nine feet. Throughout the entire nest are granaries stored with seeds, many of these store-rooms being sealed. Many of the other chambers are nurseries, in which are found the larvae, pupae, and young ants. These are probably shifted from one room to another as the surrounding conditions require. The other chambers seem to be merely working rooms and living-rooms.

Seeds of various kind are gathered upon the field and carried within the nest. The husks or hulls are torn off and carried out to be deposited to one side of the clearing while the plump, sound seeds are stored away in the store-rooms or granaries. The seeds found in the chambers are those of the surrounding vegetation, excepting, of course, those that are too large for them to handle. The seeds of the common Pig-weed (*Amaranthus albus*) were found in abundance in nearly all the nests examined. Seeds of the genus Helianthus were common in several of the nests. In

a millet field, the ants were busily engaged harvesting the seeds of the millet, which surrounded their nest.

Three classes of ants are found within the formicary—the queens, the males, and the working caste. The queens and males are winged and much larger than the workers. In the nests examined there seemed to be about an equal number of the queens and males. The females are about seven sixteenths of an inch in length. The color throughout is a yellow brown. They have one pair of small compound eyes, and three very small ocelli. The large, black mandibles are armed with seven teeth. All females are provided with a sting.

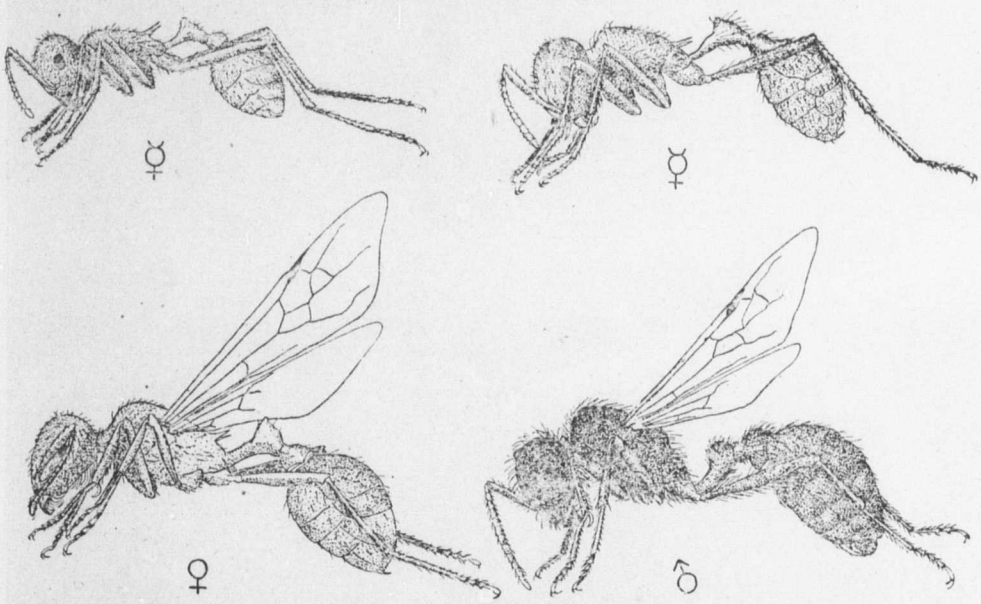
The males are about three-eighths of an inch in length, being somewhat smaller than the females. The head and thorax are nearly black. The abdomen is brown and more pointed than that of the females. The head, which is small, bears two large compound eyes and three small ocelli, the middle one being much larger than the other two. As with all Hymenopterous stinging insects, the males have no sting.

The workers vary from three-sixteenths to five-sixteenths of an inch in length. Their color is a rich chestnut brown throughout. The head is very large, being from two to three times the width of the prothorax. The large, curved mandibles, armed with seven teeth, are well fitted for the purpose of general work, such as seizing, cutting, crushing, and sawing. The head bears no ocelli. The compound eyes are small, or about the size of those of the females. The workers are armed with a sting. The workers are very numerous, there being in some of the large nests at least ten thousand.

As with other ants, the workers vary in size, and are termed by many writers as the large-headed and the small-headed individuals, the former being called the worker major and the later the worker minor. However, with the *Pogonomyrmex occidentalis* it should be distinctly understood that there is no definite distinction between these. One may select eight or ten of the ants and so place them as to have a gradation from the smaller or worker minor to the larger or worker major. But it certainly is not right to select the two extremes and give them an individual name, when the other eight, coming in between, deserve an equal distinction. There are no characters or division of labor to justify such a distinction.

Although this ant has been endowed by nature with two of

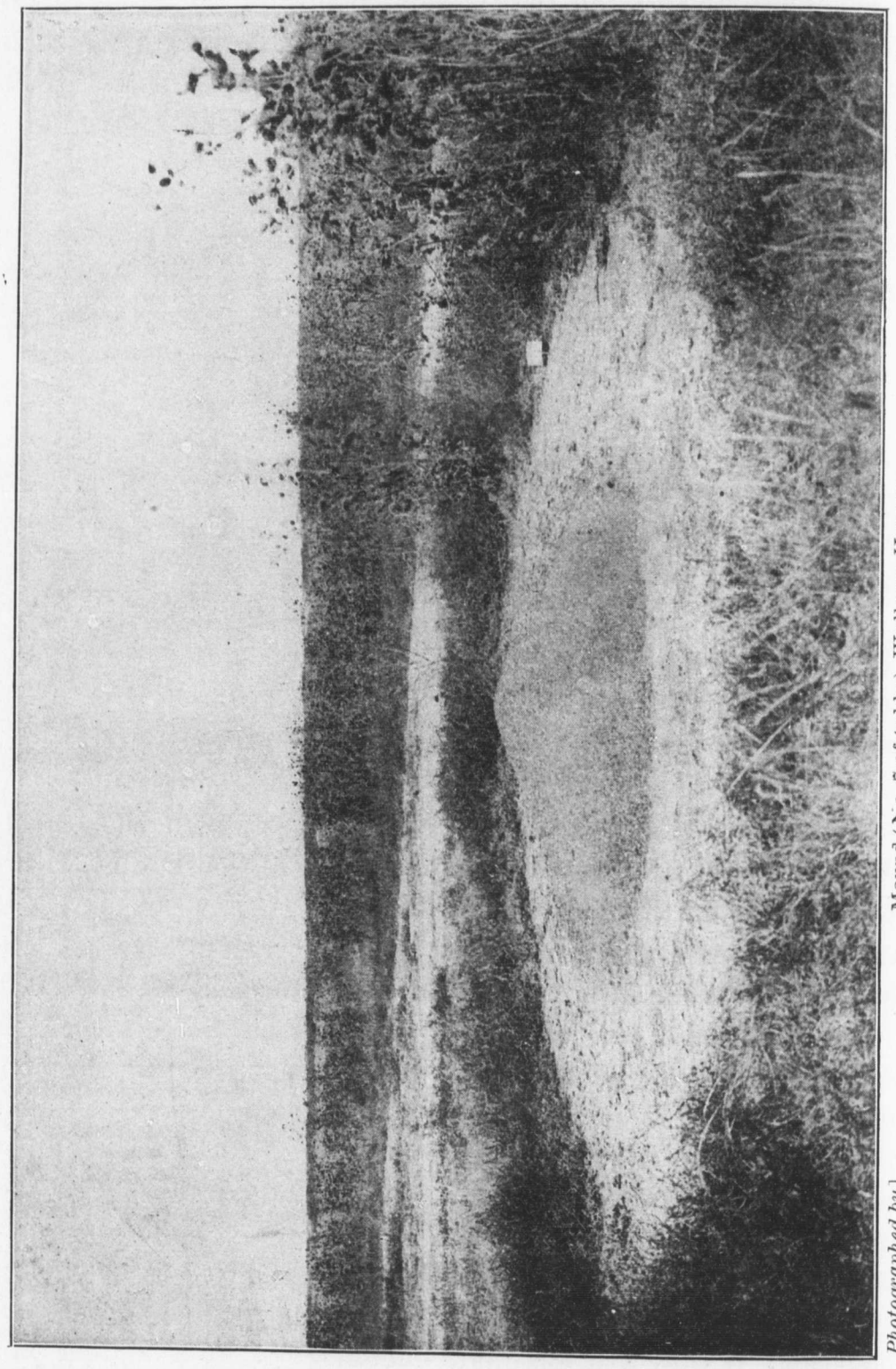
the most formidable offensive and defensive weapons known in the insect world—large, pointed mandibles for seizing, tearing and crushing, and a sting that is most painful—and although she is larger than most species of ants, yet she is not quarrelsome nor warlike, but on the other hand she is a peaceful and good-natured insect in many respects. This ant permits other spe-



Pogonomyomex occidentalis. Upper two, workers, minor and major; lower two, female and male. (*Drawn by Ella Weeks.*)

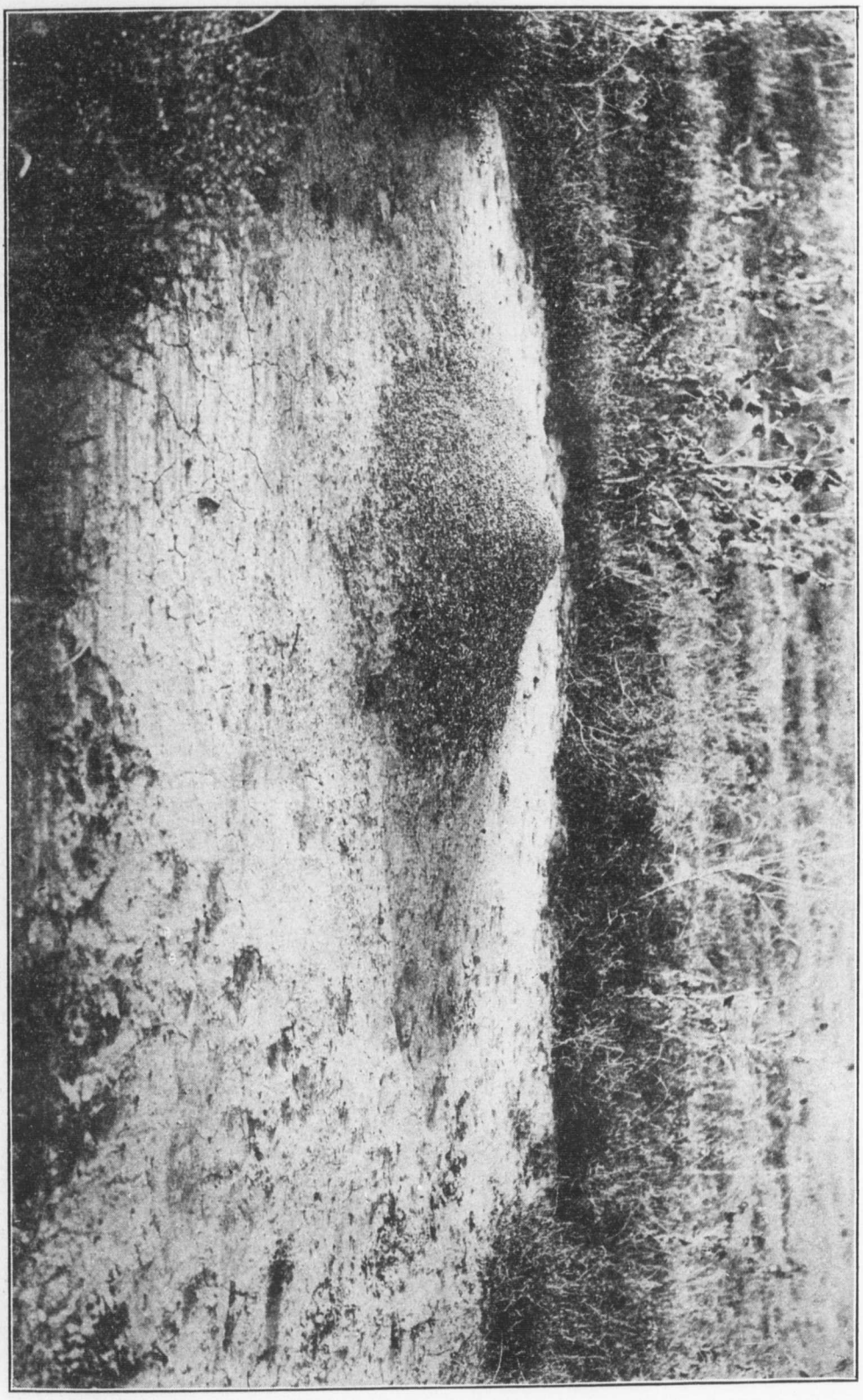
cies of ants to come on the clearing and establish their nests or erect their little crescent-shaped piles of loose dirt within a few inches of the base of the mound. I have observed as many as ten of these little nests on one clearing. Neither the nests nor the little ants are molested by the occident ant. But, on the other hand, the occident ant is chased and attacked by these intruders, if she should happen to pass too near the little one or her nest. Again, I have found our common termites and a species of another ant living within the chambers of the occupied nest. These intruders or parasites were not disturbed or molested by the rightful occupants of the nest. However, when their formicary is molested or seriously endangered by an enemy, they skillfully put to use the warlike weapons with which they are armed, and, if they are fortunate enough to make a landing on a person, and they usually are if you are disturbing them, they bow the head, seize the skin with the mandibles, bow the back, curve the abdomen, and thrust the sting into the tissue.

GEO. A. DEAN.



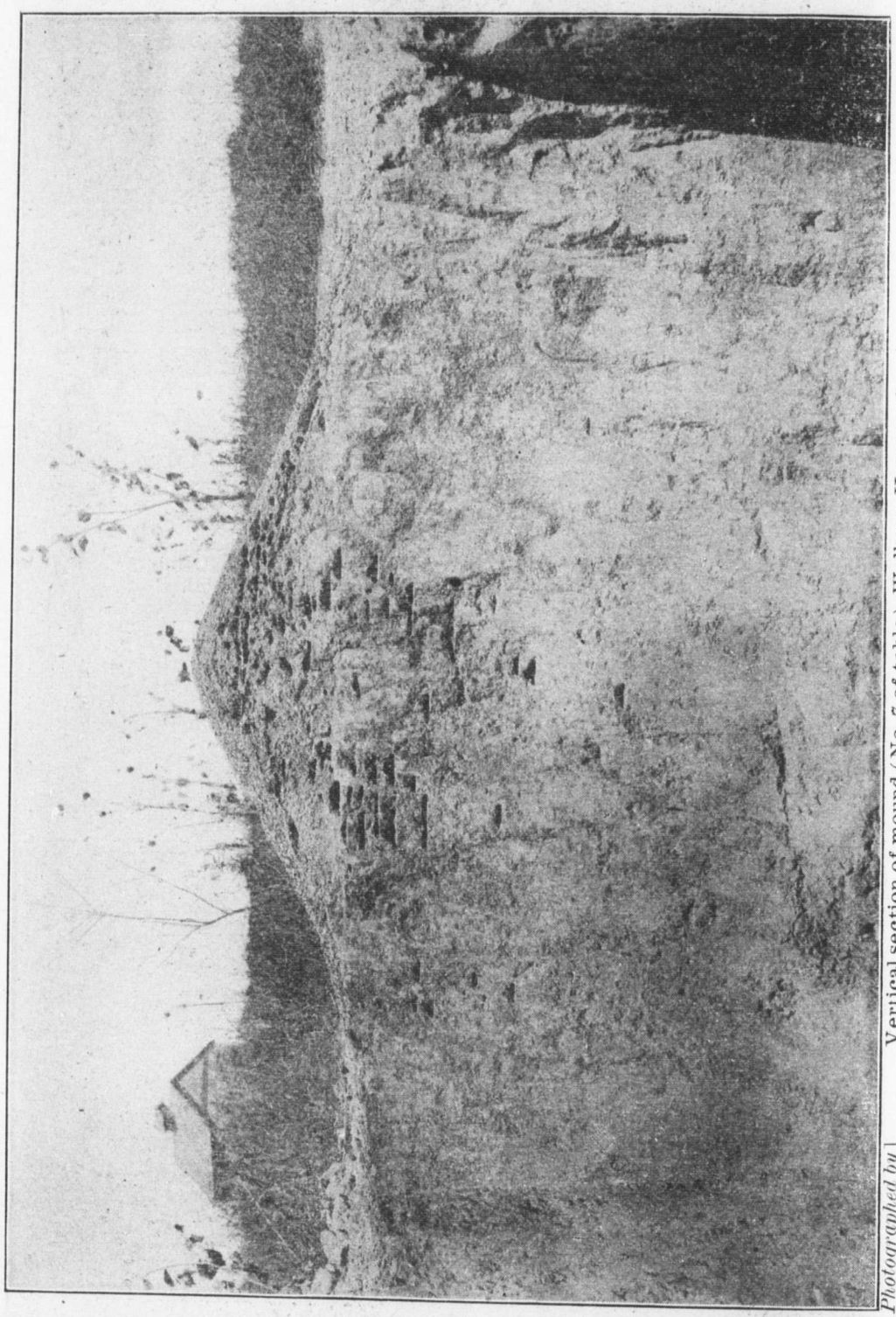
Mound (No. 7 of table), Wallace, Kansas.

[*Photographed by Geo. A. Dean.*]



Mound (No. 1 of table), Wallace, Kansas.

[*Photographed by Geo. A. Dean.*]



[Photographed by Geo. A. Dean.

Vertical section of mound (No. 7 of table), Wallace, Kansas, showing about five feet of excavation.

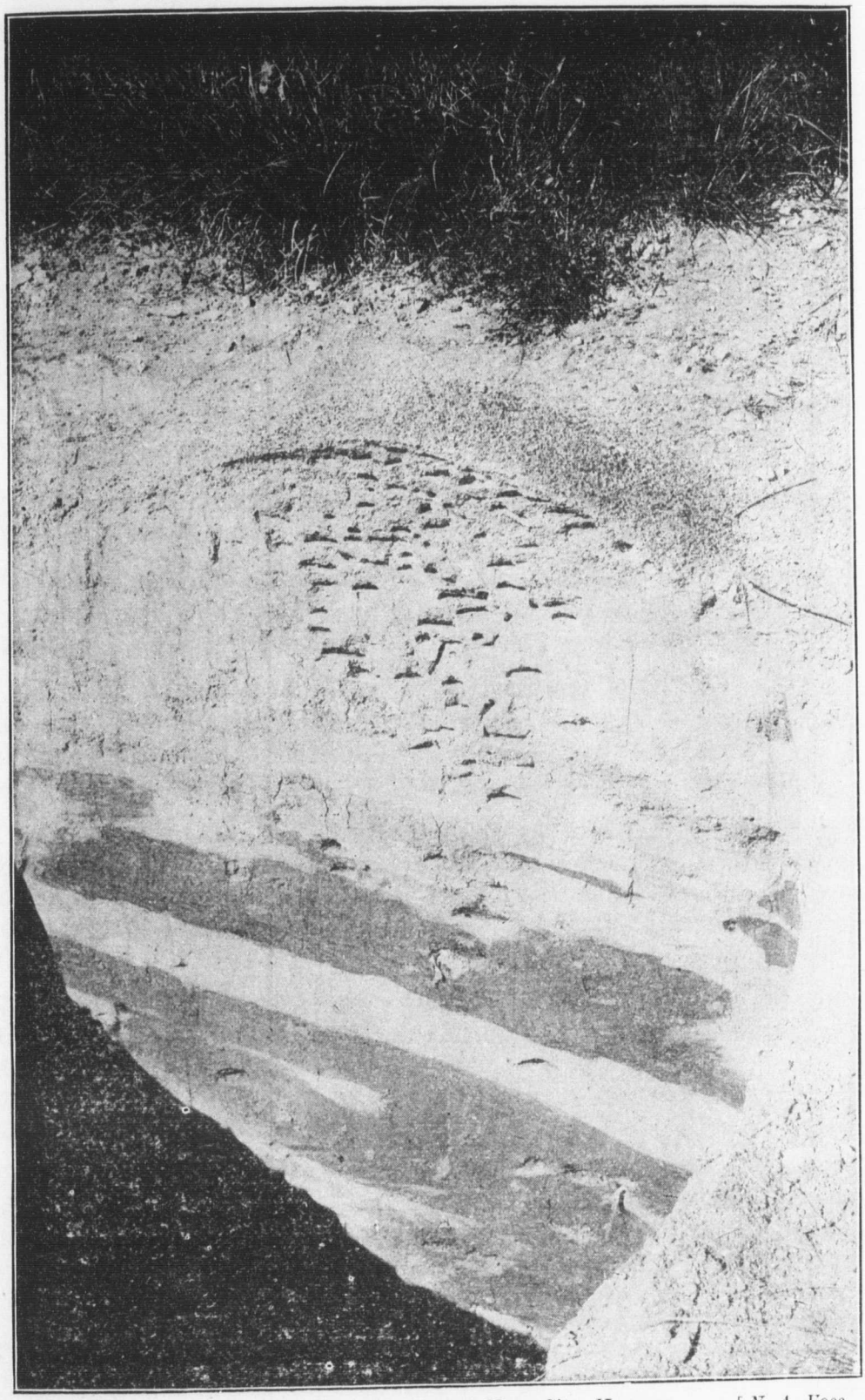
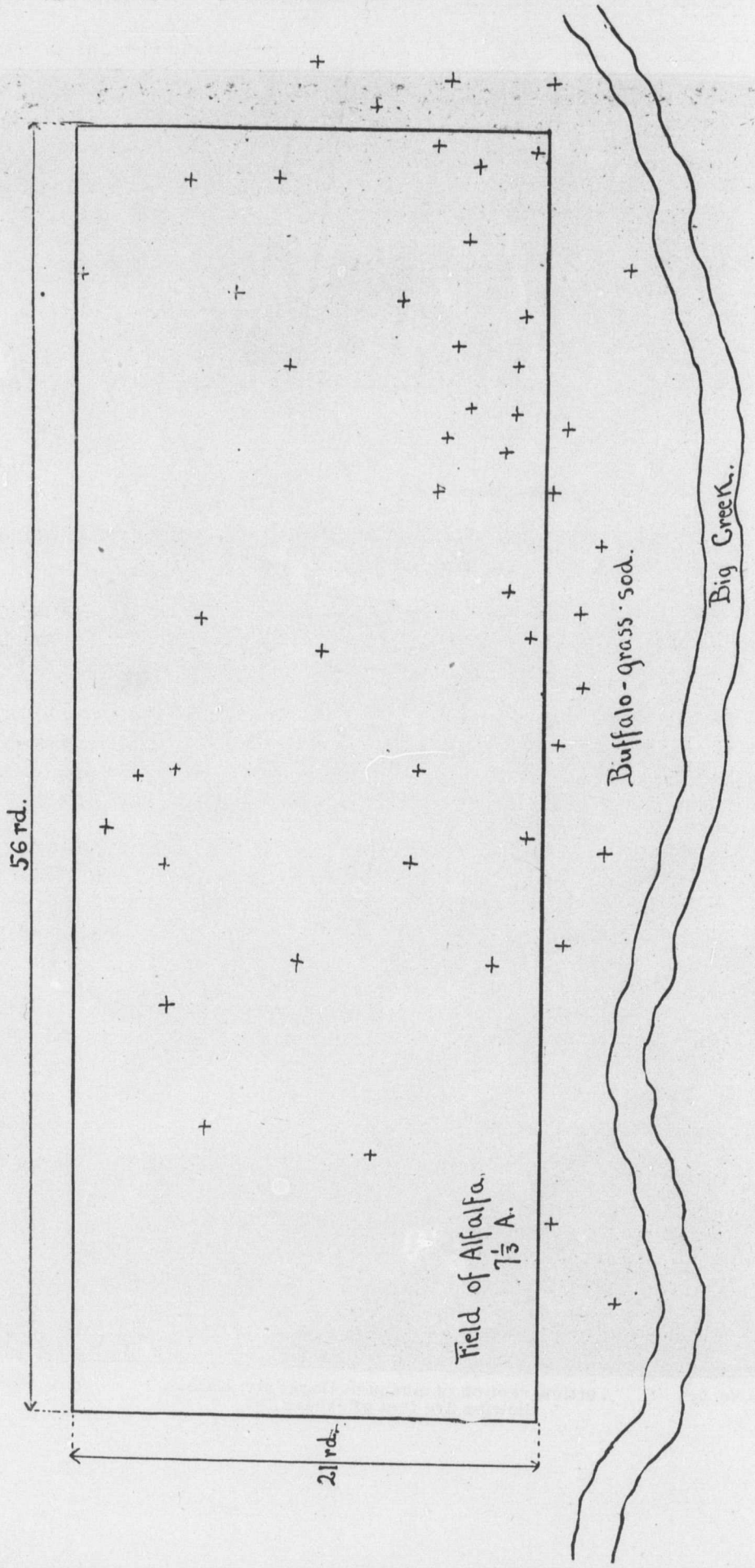


Photo. by] Vertical section of mound at Hays City, Kansas, showing five feet of excavation. [*N. A. Voss.*



Map of alfalfa field, showing locations of mounds.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The College *Jayhawker* is now a monthly magazine. Price, 50 cents a year.

Professor Dickens and Assistant Rose attended a farmers' institute at Stockton last week.

Professor Ten Eyck and Assistant Eastman attended the farmers' institute at Seneca last week.

Professors Roberts and Ten Eyck attended a farmers' institute at Hiawatha on January 22 and 23.

Professor Erf attended the Nebraska State Dairy Association, at Lincoln, last week and read a paper on "The Selection of the Dairy Cow." He left on Tuesday and returned on Friday.

Last week Assistant Kinzer, of the Animal Husbandry Department, took a series of photographs of the stock-judging classes at work upon the draft horses. Pictures were also taken of the class in corn judging. Doctor Orr manipulated the camera.

The Marshall County Club had an evening social on January 18, in Kedzie Hall. Twenty-seven students from that county and a number of invited guests were present, and all report a "good time." Another social will be held by the Marshallites some time in February.

Gertrude Williams, formerly teacher of calisthenics at the Agricultural College, and now Mrs. Lundgren, of Burlington, Iowa, writes that she has a five months old boy Master—Warren Williams Lundgren. She says she will some day send him to the Kansas State Agricultural College.

The College *Jayhawker* has been given a permanent room for headquarters in the basement of the south wing of the main building. The room is close to the printing-office and was formerly used as an "odds and ends" room by the janitor. The "hawkers" are feeling good over their new office. Drop in and see them.

The annual meeting of the Kansas State Dairy Association will be held in Topeka, January 26, 27, and 28, in connection with the Mid-Winter Exposition. There are a number of associations that will take advantage of the low railroad rates granted for the exposition to hold their annual meetings in Topeka at that time. Among others, the Independent Telephone Association of the State, and the State League of Building and Loan Associations.

Prof. W. L. Hofer, formerly of the chair of music of this College, has just received a printed copy of his latest composition, "Eureka Lake." This is a beautiful waltz, written for piano. The cover page is arranged with two scenes of the picturesque lake. It will soon be ready for publication.

Lieut. Pearl M. Shaffer, professor of military science and tactics at this College, has received the notice of his promotion to the rank of captain. When the news became known among the students, the boys cheered him vigorously and called on him for a speech after the chapel exercises Tuesday. He responded in his usual modest way, telling them that the best way to obtain promotion in any calling is to do the whole duty promptly and efficiently. Captain Shaffer enjoys his work at this College. He will probably remain with us for some time.

Last Wednesday the building committee of the Manhattan Carnegie Library let the contract for the erection of the building to the lowest bidder, contractor P. H. Sanneman, of Clay Center, Kan., for the sum of $10,720.50. The contract for the steam heating and plumbing was given to James Stewart, of Junction City, for $1040.85. The building is to be completed by August 1. The contract does not include the furniture or library fixtures, and it is estimated that these will cost at least $1200. The lot is the property of the library association and is worth about $2000.

The attendance at the Kansas State Agricultural College this winter term again shows a considerable increase over that of the fall term and all previous winter terms. On January 16 there were present 1331 undergraduates and resident graduates. These students were classified as follows:

	1901-2	*1902-3*	*1903-4*
Senior	54	65	103
Junior	98	150	146
Sophomore	218	220	186
Freshman	353	512	550
Preparatory	167	160	144
Special	8	13	16
Graduate	....	....	11
Dairy	67	35	16
Farmers' Short Course	126	....	123
Apprentice	....	....	36
Totals	1091	1155	1331

The figures for 1901-2 were compiled January 17, 1902; those for 1902-3, January 22, 1903; for this term the work was done January 16. The only division where we had expected to see more students enrolled and where there has been a falling off in numbers is the dairy course. It seems that the concentration of the dairy interests in the State and the wholesale introduction of the hand separator have had a tendency to reduce the number of aspirants for high-grade dairy work. In all other divisions there has been a healthful growth and a verification of the prediction that the increased requirements for admission and the addition of a small incidental fee would not seriously injure the attendance.

VOL. 30 NO. 16

Historical Society

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B. BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Public Speaking
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.) ..... Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.) ..... Secretary

JACOB LUND, M.S. (K.S.A.C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K.S.A.C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.) ..... Assistant in Music
William Anderson, B.S. (K.S.A.C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo. C. Wheeler, B.S. (K.S.A.C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Sumner M. Manley, S.B. (Mass. Inst. Tech.) ..... Assistant in Mechanical Engineering
James Cran ..... Foreman of Blacksmithing
Miss C. Jeanette Perry, B.S. (K.S.A.C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.) ..... Bookkeeper
Miss Mamie Alexander, B.S. (K.S.A.C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., FEBRUARY 9, 1904. NO. 16

KANSAS DAY.

JANUARY 29, 1861, President Buchanan signed the bill that made Kansas a free State, and on February 9 Charles Robinson was inaugurated as our first governor. "On the same day Jefferson Davis was elected president of the Southern Confederacy, and the war that began in Kansas extended to the entire Union." Such is the climax of the story recalled to all old settlers by Kansas Day. To the younger generation, the story of early Kansas history needs occasionally to be re-told, and it is well that we should pause at this time and review that heroic period.

The history of Kansas is not a brief one if we measure it by events. Possibly the first European to traverse Kansas soil was Coronado, a Spaniard who, coming from Mexico, crossed the western part of the present State at the same time that De Soto was exploring the Mississippi river. Thus Spain, as a result of the joint labors of Coronado and of De Soto, had a first claim to Kansas. However, France was the nation that first secured actual possession of the Mississippi valley. The territory of Kansas became a part of the national domain by two separate acquisitions. Most of the State was in what came to be known as Louisiana and was therefore made a part of the United States territory by the purchase of 1803, soon to be commemorated by the great St. Louis exposition. That portion of the State which lies west of the one hundredth meridian and south of the Arkansas river was a part of the Texas annexation of 1845.

The first political question that seriously concerned this territory was that of slavery. This issue remained quiescent as long as the sections remained equally balanced in the United States senate and as long as the Ohio river formed a natural boundary between freedom and slavery. The nation had "slumbered on" from the adoption of the constitution without realizing the growth of slavery and the changed attitude of the South. Now Missouri,

from the Louisiana territory and lying north of the line of the Ohio river, applied for admission to statehood with a provision in her constitution allowing slavery. Suddenly the nation was aroused to angry debate over the question so that Jefferson, from his home in Monticello, declared that the sudden appearance of this slavery contention, with its attendant danger, startled him "like a firebell in the night." After a season of the greatest excitement and alarm for the welfare of the government, the trouble was allayed by the well known Missouri compromise of 1820. This act admitted Maine as a free state and Missouri as a slave state, but also provided "that in all that territory ceded by France to the United States under the name of Louisiana, which lies north of thirty-six degrees, thirty minutes north latitude, not included within the limits of the state (of Missouri), slavery shall be and is hereby forever prohibited."

Thirty years later, when we were attempting to provide a government for the territory secured from Mexico, it was proposed to extend the Missouri compromise line to the Pacific ocean, but instead of this the principle of popular sovereignty was applied to the newly acquired territory. The United States had now reached her natural territorial boundaries and the nation breathed freely, feeling that the vexed slavery question was settled for every foot of our vast domain. Such was the condition of affairs when Stephen Arnold Douglas, the Little Giant of Illinois, brought forth in the halls of our national senate his famous Kansas-Nebraska bill, which provided for the organization of the two territories of Kansas and Nebraska, and applied the principle of popular sovereignty to the slavery question within the said territories. He was at once accused of breaking the solemn compact of the compromise of 1820, which forever prohibited slavery from this territory. He replied that the principles of the compromise of 1820 (congressional prohibition of slavery within the territories) had already been superseded by the principles of the compromise of 1850 (settlement of the slavery question by popular sovereignty). He ignored the fact that each of these acts applied to a different territory. He was also accused of bidding for the support of the South for the Presidency of the United States. It is possible that Douglas, with his western ideas and western experience of self government, really believed that the best way to

settle the slavery question (if it were not already settled) would be to let the westerners settle it for themselves.

However well the principle of popular sovereignty as a method of disposing of the slavery issue might work in a state, it soon became evident that it would not work at all in a territory preparing for statehood—especially would it not work in Kansas. Concerning this territory the Southerners said, that since the one bill had now organized the two territories it was evident and but fair that Kansas should become a slave state; moreover, it was directly west of the slave state of Missouri, and hence the slave element was nearer to it and might be expected to occupy it first. But the North replied that this territory had already been forever devoted to freedom by the compromise of 1820. Such were the conditions under which the New England Emigrant Aid Society was organized for the purpose of making Kansas a free State, and such were the conditions under which the Missourians, assisted by the South, determined to stop the migration of free men to Kansas by intimidation, or if necessary by murder, and to make Kansas a slave state, even though by open violence. Both sides armed for the conflict and the Kansas war began.

The border war that thus began in Kansas continued throughout the eastern part of the State, with the city of Lawrence as a center, until after the close of the Civil War. Meanwhile the attempt was being made to apply the principle of popular sovereignty to the government of the territory. Andrew H. Reeder, the first governor of Kansas, called an election for November 29, 1854, to choose a delegate to congress. Whitfield, the pro-slavery candidate, was elected. But according to the report of a congressional committee, out of 2843 votes cast, only 1114 were legal against 1729 illegal ones. The first census was completed in February, 1855, and showed a population of 8501 persons, of whom 2905 were voters. One month later the election of members for the territorial legislature was held. "On the day appointed, thousands of Missourians swarmed across the border, became 'actual residents' of Kansas for a day, overawed the election officers and deposited their ballots for the pro-slavery candidates; 1410 legal votes and 4908 illegal votes were cast. Of the legal votes, 791 were for anti-slavery and 619 for pro-slavery candidates. Nevertheless the governor issued certificates of election to all but eight of the pro-slavery candidates." When the legislature met it promptly unseated

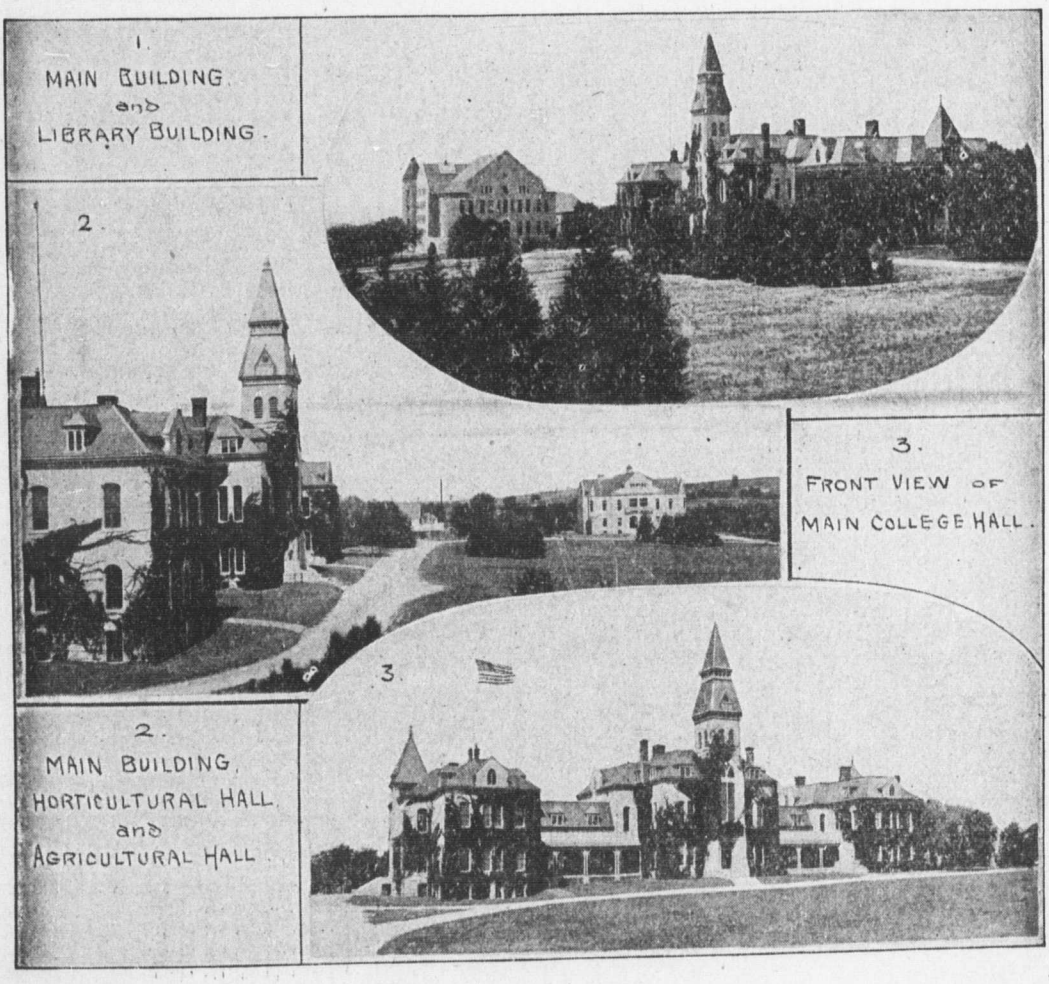
these eight anti-slavery men and seated pro-slavery men in their place. This legislature reënacted the laws of Missouri almost entire, and added a barbarous slave code. Thus had so-called popular sovereignty established a "de facto" slavery government for Kansas.

The pro-slavery element having thus gained coutrol of the territorial government, the free-state party now determined to try to secure admission to statehood as the only practicable way of securing justice and order. Accordingly, in November of 1855, they proposed the Topeka free-state constitution, which was promptly ratified by the free-state inhabitants, the pro-slavery party refusing to vote on the proposition. A bill to admit Kansas under the Topeka constitution passed the national House of Representatives July 3, 1856, but the bill failed in the Senate. This Topeka constitution never went into effect.

Later—and it is an intensely interesting story, but space forbids details—the pro-slavery men held a constitutional convention at Lecompton and there proposed a constitution for Kansas with slavery, or with more slavery. When submitted to the people thus, the free-state men refused to vote and this constitution was adopted by the pro-slavery men, as the earlier Topeka constitution had been adopted by the anti-slavery party. Later a free-state legislature submitted this Lecompton constitution to the people for acceptance or rejection, and it was almost unanimously rejected, the pro-slavery party now refusing to vote. President Buchanan urged Congress to admit Kansas under the Lecompton constitution. A bill to this effect passed the Senate, though opposed by Senator Douglas, who did not believe in forcing slavery on a people who did not want it, and who hereby began that division in the democratic party which resulted later in the election of Abraham Lincoln as President of the United States. The House compromised the case by submitting the Lecompton constitution once more to the people of Kansas, but at the same time brought pressure to bear on the people of Kansas to try to force its adoption. However, it was rejected by a vote of 11,300 against it and only 1788 in its favor. "This ended the attempt to force slavery into the territory."

Meanwhile, still another constitution was framed in Kansas. This is known as the Leavenworth constitution and was very similar to the one first formed at Topeka. This was adopted by

the people—a very light vote being cast—but Congress never took any action respecting it. Finally, in 1859, a fourth constitution was framed for "bleeding Kansas," this time at Wyandotte. It was chiefly the work of young men, and this constitution was based largely on that of Ohio. It was, of course, a free state constitution and was promptly ratified by the people. A bill to admit Kansas to the Union "passed the House of Representatives April 11, 1860, but a favorable vote could not be secured in the Senate until the Southern senators had withdrawn. The bill was finally passed January 21, 1861, and signed by the President on the 29th. February 9, Governor Robinson was inaugurated, and thus was finally established the civil government of the State of Kansas. On the same day, Jefferson Davis was elected President of the Southern Confederacy, and the war that began in Kansas was extended to the entire Union." RALPH R. PRICE.



WINTER TERM PROGRAM, 1904, SHOWING INSTR

INSTRUCTOR.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.
Walters	Home Arch....40	Projection....28	Projection 33	Projection....41
Evans	Object Draw...27-14	Object Draw...27-27	Object Draw [3]....14	El. Projection [3]. 26 Object Draw.[3]...29
Weeks	Geomet. Draw [3]...12	Geomet. Draw....29	Geomet. Draw [3]...31	Object Draw.[3]....24
Brown	Notation, Singing, Band, and Orchestra			
Brown, R. H	Organ and Orchestral Instruments			
Harris	Piano			
Willard [4]	Agricul. Chem... 36	Org. Chem. T T S..41	Org. Chem. T T S..36	
Mathewson	Chem. Metals [3]....34	Chem. Met. W F..44	Chem. Met. W F..39	
McClenahan			Chemistry I.....56	Chemistry I.....35
Vail				
Popenoe [4]	Geology... 23	Geology.....31	Sp. Entomology .. 1	Sp. Entomology .. 2
Scheffer	Special Zoölogy.....		Zoölogy 30	
Remick	Dif. Calculus.....30	Trigonometry.....30	Higher Algebra...31	Higher Algebra...20
Halstead	Higher Algebra...26	Geometry II.....25	Geometry II 18	Algebra III 29
Anderson	Geometry I 31	Trigonometry.....24	Algebra II 35	El. Physics.....29
Shaw	Algebra III.....32	Algebra II 34		Geometry I. 28
Eyer	El. Physics.....27	Physics.....21	Physics.....36	Elec. Machines...14
Hamilton	Physics II.... ...31	Sound & Light ...25	El. Physics 40	Physics II.....35
Roberts [4]	El. Botany 22	Plt. Morphology 40		
Paull [4]			Plant Morphology	31
McKeever	German 18	Logic.....27		Phil. Education...13
McCormick			Eng Power Plts.. 9	
Paul	Appl. Mechanics..22		Valve Gears [2]	
Manley		Kinematics... ...15		Kinematics.....30
House	Woodwork.....26	Woodwork..... .21	Woodwork. 14	Woodwork.....30
Wabnitz	Machine-shop			Monday A M., 15; P.M., 8
Ridenour	Foundry	17—16	Foundry	18— 8
Cran	Blacksmithing I	7—13	Blacksmithing I	4—16
Mayo [4]	Vet. Science II...25	Dis. Dairy Ani.[1]...13		
Barnes [4]			Physiology and Laboratory	30
Dickens [4]	Horticulture.....37		Floriculture	21
Eastman [4]	Forestry 2	Forestry 35	Horticulture.....30	Horticulture.....31
Baxter			Floriculture	8—13
Brink	Readings.... 24	Eng. Literature I, 33	Eng Literature I, 31	Eng. Literature...20
Rupp	Classics 33	Composition 18	Classics.....33	Rhetoric II.....38
Rice	Rhetoric I.....36	Structure. 45	Structure 52	Readings.....37
Hopps	Composition 23	Readings.... 21	Classics 31	
Ten Eyck [4]			Farm Mechanics..24	
Shoesmith [4]	Crop Production, 32	Crop Production, 35		Crop Production, 36
Kyle	Agriculture. 48	Agriculture.....57	Agriculture.....49	Agriculture. 51
Calvin	Cooking [3]	21	Dom. Science II [3]	17
Rose	Cooking	15—16	Dom. Science II [3]	17
Pancake	Cooking	15—19	Cooking	16—13
Price	Gen. History II...48	Gen. History II...30	Econ. Principles..28	Gen History II...41
Kammeyer	Oratory II. 41	Oratory I 41	Oratory II.....44	Oratory I. 32
Erf [4] and Wheeler [4]	Feeds & Feeding..35	Feeds & Feeding, 32	Feeds & Feeding, 36	Feeds & Feeding, 10
Kinzer [4]	Breeds of Stock..40	Breeds of Stock, 36	Breeds of Stock, 33	Breeds of Stock, 35
Menzies	C. & B. Making....12		Dairying 18	Dairying.....18
Rickman	Printing..... 4	Printing..... 4	Printing..... 6	
Rodell	Printing..... 4	Printing..... 4	Printing 6	
Jones		Dressmaking.....11	Dressmaking.....13	
Cowles	Sewing	19—19	Sewing II	15—10
Coe	Sewing II	17—19	Sewing I.....12	Sewing III 12
McFarland	Algebra I.....36	Bookkeeping 36	Bookkeeping.....35	Bookkeeping.....44
Holroyd		Geometry I 41	Readings.....33	Algebra II 44
Short				
Thompson				
Fearon	Calisthenics			
Vandivert	Rhetoric I.....30		Composition 24	Composition 33
Goodwin			Readings 23	Algebra I 33
Christensen			Algebra I 29	
Reynolds				
Finlayson				
Haggart	Algebra II ... .39			
Failyer		Algebra I. ... .24		Algebra III.....34
Allingham				
Bourne				
Stump	Sewing II	19—17		

[1] First half term.
[2] Second half term.
[3] Every other day.
[4] Experiment Station Work.

Morning Class Hours (Tu. Wed. Thur. Fri. Sat.):
1. From 9:05 to 9:50.
2. From 9:55 to 10:40.
3. From 10:45 to 11:30.
4. From 11:35 to 12:20.

STRUCTOR, SUBJECTS, AND NUMBER IN CLASS.

Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.
Perspective ..... Tu., 29			
Projection I..... 34			
Object Drawing.....Tu., 32; W., 26; Th., 29; F., 25			
Freehand Drawing... ..... Tu., 52; F., 37			
Geometrical Drawing.....W., 33; Th., 30			
Quantitative Analysis..... .....Tu. & Th., 14			
Chemistry of Metals Lab..Tu. & Th., 59; W. & F., 60		Agricultural Chemistry Laboratory..... M., A. M., 17	
Chemistry I Lab.....Tu. & Th., 44; W. & F., 37		Advanced Chemistry, 7:50.....3	
Chemistry of Metals Lab..Tu. & Th., 59; W. & F., 60			
Zoölogical Laboratory..... 33			
Algebra III..... 24			
Elecrical Measurements..... 36			
Algebra II..... 23			
Electrical Laboratory..... 14			
Physics Laboratory 66			
Morphology Laboratory, Tu & Th.....40			
Elementary Psychology, 7:50, 100 each day.....			
Engineering Laboratory 9			
Engineering Laboratory 9		Machine Design .... 1-4 Monday, 23	
Mechanical Drawing .. ..Tu. & Th., 12; W. & F., 11		Apprentice Drawing.....Monday A. M., 17	
Woodwork..... .. ...Tu. & Th., 39; W. & F., 40			
Machine-shop.....Tu. & Th., 19; W. & F., 17		Machine Shop.....Tu. & Th., 6; W. & F., 3	
Foundry.....Tu. & Th., 19; W. & F., 19		Foundry..... ... . Tu. & Th. 14; W. & F. 15	
Blacksmithing I..... W. & F., 23; II.....Tu. & Th., 21		Blacksmithing I .....Tu. & Th., 19; W. & F., 22	
Bacteriology.....Tu. & F., 10; W. & Th. 7			
Floriculture. 7:50 19			
Horticulture Industrial.....Tu. & Th , 12; W. & F., 20		Horticulture Industrial.... Monday, A. M., 8; P. M., 14	
Floriculture, 7:50.....19			
Readings..... 27			
Grain Judging..... .....W. & F., 20			
Home Nursing.....41			
Advanced Cooking.....Tu. & Th., 18; W. & F., 18			
Rehearsals.....			
Stock Judging..... 144			
Dairy Laboratory.....36			
Printing .. ..Tu. & Th., 22			
Printing.....Tu. & Th., 22			
Dressmaking.....Tu. & Th., 11; W. & F., 13			
Grammar B.....25	Arithmetic B 34		
Arithmetic A.... 35	Arithmetic A.... 32	Grammar B 30	Arithmetic B.....35
History B.....31	Geography.....28	History B.....33	Spelling.... 22
Readings.....25			
Algebra I..... ..35			
		History A..... 32	History A 27
Elementary Physics Laboratory.....25			
		Grammar A..... 33	Grammar A 31
Elementary Physiology 20	Elementary Physiology 31	Advanced Physiology.....	T, 3

Afternoon Class Hours (Tu. W. Th. F. S.):
5. From 1:35 to 2:20.
6. From 2:25 to 3:10.
7. From 3:15 to 4:00.
8. From 4:05 to 4:50.

Afternoon Industrial Hours (Tu. W. Th. F.):
5. From 1:30 to 2:30
6. From 2:30 to 3:30.
7. From 3:35 to 4:35.
8. From 4:35 to 5:35.

BOARD MEETING.

The Board of Regents were in session January 27, 28, and 29, and transacted the usual business of the winter session. Among the special business that came before the Board the following items will be of general interest:

The matter of seating and stage fitting of the new Auditorium was referred to the building committee. Opera chairs in birch, mahogany finish, at $1.45 per seat, were authorized to be purchased of Kane & Co.

Professor Walters was requested to superintend the construction of the Auditorium to its completion.

Professor McCormick was requested to prepare drawings and specifications for the new additions to the shops and to refer same to the building committee for approval and contracting.

The name of the Oratory Department was changed to Public Speaking Department.

Professor Erf was allowed leave of absence to act as expert dairyman at the St. Louis Exposition. It was ordered that a sufficient amount be deducted from his salary to carry on the work of his department during his absence. The Department of Animal Husbandry was allowed to make an exhibit at the exposition.

Regents Fairchild, Nichols and Friend were appointed a committee to revise the course of study, after consultation with the head of each department.

Arrangements were made to procure plans, call for bids and let contract for the new College waterworks.

S. M. Manley was elected assistant in mechanical engineering at a salary of $1000 per year, and James Cran was elected foreman of the blacksmith-shop at a salary of $750 per year.

The following resolution was passed and ordered sent to the Kansas delegation in Congress:

WHEREAS, There is now pending in Congress a bill (H. B. 8678) to increase the federal aid to agricultural experiment stations, first granted in 1887, and

WHEREAS, The Kansas State Agricultural Experiment Station has proved itself a potent factor in advancing the material prosperity of this State, repaying many fold its cost, and

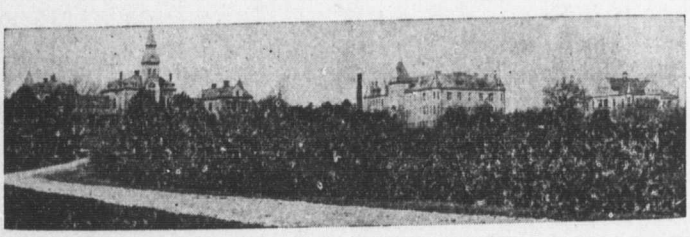
WHEREAS, Our Experiment Station, through experience and greatly widened opportunity, is now in position to most advan-

tageously and economically use additional funds for the still further advancement and enlargement of scientific agriculture; be it

Resolved, By the Board of Regents of the Kansas State Agricultural College, now in regular session assembled, that they express their hearty approval of said experiment station appropriation bill, and urge upon Congress its speedy passage.

The Board adjourned to meet at call of the President.

Jesse Gardner, a young man from Huscher, in Cloud county, met death through an accident at the College week before last. He was working in the engine-room of the power plant when it became evident that something was wrong with the working of the hot-water pumps. Gardner went down the stairway into the pump pit, which is a well about 20 feet deep. This hole was covered with boards, which in some way had become dislodged, together with some of the brick-work around the top of the pit. The whole mass fell upon the boy below and killed him instantly. The body was buried under the debris. The falling platform broke the hot-water pipes and the water rose in the well so that the body was covered with several feet of water. The accident occurred at eight o'clock and the body was recovered at about nine. Gardner was not a registered student, having been here only a week. He was a cousin of Elmer Gardner, an assistant in the shops. Coroner Colt, of Riley county, did not consider it necessary to hold an inquest. The announcement of the sad occurrence was made at chapel and College was closed for that day. It was necessary to shut down the plant in order to make the repairs on the pumps and hot-water pipes which were broken by the fall of material. The deceased was about 22 years of age and a bright, industrious young man. His cousin accompanied the body home.



THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99]..... Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

President Nichols attended the Kansas Day banquet, at Topeka, on January 29.

Doctor Barnes attended a farmers' institute at Rome, Summer county, February 4 and 5.

Doctor Mayo has been reappointed honorary veterinarian to the State Board of Agriculture.

The Veterinary Department has a bulletin on "Blackleg and Vaccination" ready for the printer.

Professors Walters and Dickens will attend a farmers' institute at Hanover, Kan., on February 12 and 13.

The short course dairy class will take up work in cheese making next week. Instructor Menzie will start the class on "Cheddar" varieties.

Professor Ten Eyck attended a farmers' institute at Randolph last week, as substitute for Professor Erf, who was in attendance at the State Dairy Association meetings at Topeka.

Professor Walters attended a family reunion of the Walters' last week at Junction City and reports that there were two of his sisters, four brothers, and thirty-two other relatives present.

While passing through Wichita recently Professor Mayo met H. Tracy, student at this College in '02, who is now travelling through the Western States in the interests of a photographic company.

The Animal Husbandry Department has recently engaged Mr. Stephen Hopkins, formerly with Mr. P. B. F. Sotham, an extensive Missouri feeder and breeder, to take charge of the pure-bred and show cattle.

Assistant Kinzer, of the Animal Husbandry Department, attended the Central Shorthorn Breeders' Association, at Wichita, Kan., February 2. He addressed the association on "Native Grasses for Shorthorn Cattle."

Regent Fairchild addressed the students in chapel on Friday morning, January 29, on "Integrity." The Regent is a pleasant and forceful speaker. The students like to hear him, and call him out every time he visits chapel.

John G. Woolley will speak at Manhattan on the evening of February 18 on temperance and prohibition. Mr. Woolley is one of the very best public speakers on this subject, and the people of Manhattan can be sure of a rare treat.

Assistant Menzies, of the Animal Husbandry Department, visited a large number of representative farmers in the vicinity of Manhattan to induce them to produce more milk for the College dairy. He reports considerable success.

The Horticultural Department has done considerable filling and grading around the new Dairy Hall during the past three weeks. The earth taken out of the heating tunnels last summer and fall has found a very proper final disposition.

Supt. C. G. Swingle, of Riley county, has arranged for a corps of normal institute instructors as follows: Supt. J. E. Edgerton, conductor; Superintendent Heusner and Prof. O. H. Halstead, instructors. It is expected that the normal will be held in July.

Last week the Animal Husbandry Department sold seventy five hogs averaging two hundred seventy pounds. They were of the mixed-breed test. The results of this test will be published in a Station bulletin. The price received was $4.48 per hundred, in Manhattan.

Professor Erf will leave for St. Louis on Wednesday of this week to meet with the American Breeders' Association for the purpose of formulating a demonstration test for dairy cows at the Louisiana Purchase Exposition. He will be installed as treasurer of the association.

Doctor Mayo is receiving letters every day and from all parts of the West inquiring for his new book on "The Care of Animals." All orders for the book should be sent to the publishers, McMillan Company, New York, or to the Coöperative book-store, Manhattan, Kan. The book, neatly bound in cloth, costs $1.50 per copy.

Last week the College had its annual poultry show. The arena was filled with high-grade poultry from Manhattan and vicinity and was visited by large crowds of students and interested fanciers. Judge Rhodes, of Topeka, scored the birds for the classes in stock judging. A large number of incubators, brooders and other poultry apparatus were on exhibition.

Manhattan will prospect for oil and gas. A petition is being circulated securing financial backing, and considerable money has been pledged. The Commercial Club appointed a committee recently to further investigate the proposition. The amount to be subscribed is to be not less than $2,000 and the hole must be drilled not less than 1800 feet, unless oil is found at a lesser depth. Many people in and about Manhattan are interested, and work will begin inside of two months.

Miss Nettie Wayland, senior student, has gone to St. Louis where she will preside over the lunch department at the McKinley high school. Last summer Miss Wayland was in charge of the cooking classes at the Colorado Chautauqua. She also taught domestic science in the Colorado Agricultural College.

J. H. Moorman, of Smith Center, was about College last week. He left an order with the shops for a complete equipment of pulleys, hangers and shafting for a printing plant at Smith Center. He also made arrangements for having built in the shops an improved wood lathe which he has recently invented.—*Herald.*

Captain Harbord, who is chief of staff in Manila, is a Lyon county boy, son of George W. Harbord, Agnes City. Captain Jim grew up in Lyon county near the old Agnes City post-office. Recently he won first prize offered by the United States Cavalry Association for the best paper on "The History of the Northern Virginian (Confederate) During the Civil War." Harbord is a friend of General Wood and is a climber.—*Emporia Gazette.*

The new Dairy Hall is nearly plastered and wainscoted and the carpenters are busy placing the frames for the doors and the inside casings for the windows. The work of concreting the floors of the laboratory rooms began this week and contractor John Winter is expecting to finish the job in a week or two. The building was to be completed by January 1, but the general scarcity of mechanics throughout the State last fall retarded the progress of the structure.

One evening last week your "local" had the great fun of witnessing a game of basket-ball played in the Girls' Gymnasium by half a dozen professors—none of them young men. Talk about scrambling, jumping, fumbling, kicking, shouting, cavorting, snorting, panting and perspiring when the young crowd plays—we never before saw a game where the number of kilowatts of energy expended climbed half way to the top notch reached by the olympiadic efforts of these doctors of philosophy and masters of science. We made up our mind to buy an athletic suit, a box of shinplasters, a bottle of life restorer, and play too. Hurrah for basket-ball!

ALUMNI AND FORMER STUDENTS.

L. G. Hepworth, '97, Burlingame, Kan., is now traveling salesman for a wholesale seed house.

A. B. Gahan, '03, has been elected to the position of assistant in entomology and zoölogy in the Maryland Agricultural College. He expects to take up his duties in a short time.

Edna Barnes-Freeman, senior in 1901, visited College last week, and was much interested in the new things. She has been living in Denver, but is on her way to New York City, with future residence somewhat uncertain.

Master Electrician S. R. Kimble, junior in 1900, has been transferred from Ft. Totten, N. Y., to Ft. DuPont, Dela.

C. D. Lechner, '99, who, from the catalogue, seemed to be without occupation or address, came in last week and showed that he has both. He is doing a flourishing business in Russell as a contractor and builder. He was very much pleased with the improvements in the College since he left us.

The Washington alumni held their third annual meeting with M. A. Carleton, '87, December 8, 1903, and elected the following officers: C. L. Marlatt, president; W. L. Hall, '98, first vice-president; Julia R. Pearce, '90, second vice-president; Mrs. J. B. S. Norton, '96, secretary; L. A. Fitz, '02, treasurer.

Miss Jennette Carpenter, third year in 1897, now at the head of the domestic science department of the Michigan Agricultural College, called on Minnie Copeland, '98, during the holidays. She found Miss Copeland convalescent from a serious surgical operation recently performed in one of the Chicago hospitals.

Miss Ida L. Norton [third year in 1900], daughter of Mr. and Mrs. S. J. Norton, and Mr. George E. McClure were married last Monday evening in St. Louis. They transferred here to-day for a visit with Mrs. McClure's sister, Mrs. Geo. Polson, at Randolph. They will return Friday for a visit with friends and relatives here.—*Republic.*

Dr. J. W. Evans ['94] sold his residence property to St. Clair Guthrie, Monday. Consideration sixteen hundred dollars. The many friends of Dr. and Mrs. Evans will regret to hear that they have decided to move to Chicago, for the present at least, where the doctor will take a postgraduate course in surgery. They have made many warm friends here who deeply regret their leaving.—*Marshall County News.*

In the loss of their mother, Mrs. Charlotte P. Fairchild, Mrs. Agnes F. Kirshner, Rev. E. M. Fairchild, former students, Dr. Paul H. Fairchild, '86, David G. Fairchild, '88, and Anna F. White, '91, will have more than the usual sympathy that is accorded those to whom the inevitable but none the less grievous separation has come. Mrs. Fairchild was so thoroughly in sympathy with her husband's work as president of this institution, so interested in all that tended to its upbuilding, that she could not but be concerned with all that affected students and their welfare. The eyes of many former students will grow moist as they recall the sweet face and the kindly, or even affectionate, greeting of the one who is gone. In spite of frail health throughout life, Mrs. Fairchild accomplished far more for her family and for society in its more important activities than most women do with no impediments. She died January 12, at the home of Mrs. Kirshner, in Kansas City, Mo. She was buried beside her husband in Berea, Ky.—the last scene in a married life almost ideal in its manifestations of mutual sympathy, devotion, and helpfulness.

Captain James G. Harbord ['86], Eleventh United States Cavalry, has won the first prize offered by the United States Cavalry Association for the best paper on "The History of the Cavalry of Northern Virginia (Confederate) During the Civil War." The announcement was made to night during the annual session of the association, over which General Bell presided in the absence of Major General Wesley Merritt, president. The award committee consisted of Generals J. H. Wilson and Fitzhugh Lee, leaders of cavalry on opposite sides, and Colonel Arthur L. Wagner, who stands at the head of authors on subjects of strategy and the art of war. The prize paper will appear in the forthcoming number of the journal of the association. Captain Harbord is a native of Kansas, a graduate of the Kansas State Agricultural College, at Manhattan. He enlisted in the army in 1887, obtained a commission in 1891, graduated from the Infantry and Cavalry school, was a major of volunteers during the Spanish-American war, and is now an officer of the Philippine constabulary, with the rank of colonel. Captain Harbord begins his paper with this eulogy upon the men who served during the period of which the essay treats: "As long as our government shall endure; while Anglo-Saxon blood retains the characteristics which have made the race for a thousand years a conqueror; so long as men shall love the Old Flag which waves now even in the distant isles of the Southern seas—so long will the history of the great civil war, the struggle between North and South, be of vital interest to the sons of the republic. To the military student, to any of the tens of thousands whose fathers had a part in those stirring scenes, such interest cannot but be of great and permanent consequences." He closes the essay with a beautiful peroration on the American cavalryman, whether from the North or South, East or West. He says: "The American cavalryman, as exemplified on both sides in the war of secession, has been the standard toward which all cavalry has been trained for a generation, with perhaps too much leaning to the dismounted side of usefulness. No American can read the history of the cavalry of the army of Northern Virginia from that July day in 1861 when tales of the Black Horse cavalry struck terror into the hearts of the Federal recruits at Bull Run to that April morning at Appomattox four years later, without feeling proud of his race and country. More gallant cavalry than that in both armies never bestrode a horse, nor charged saber in hand, from the time of Hannibal's Numidian horse to the days when the cavalry of France stabled their mounts in twenty capitals of Europe. Never was there more pertinacious or fierce fighting done, nor ever terrible casualties more unflinchingly endured. Brave and brilliant; sturdy, strong and steadfast, the best of South, North, East and West; their happy country, over which floats the flag with ever increasing number of stars, shall never lack for defenders in her day of danger, while song and story shall recite to distant generations the heroic deeds of their ancestors."—*Kansas City Journal.* From the above extracts it is evident that Captain Harbord's paper is very interesting reading.

Historical Society

VOL. 30 NO. 17

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Public Speaking
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.) ..... Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.) ..... Secretary

JACOB LUND, M.S. (K.S.A.C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K.S.A.C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.) ..... Assistant in Music
William Anderson, B.S. (K.S.A.C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K.S.A.C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Sumner M. Manley, S.B. (Mass. Inst. Tech.) ..... Assistant in Mechanical Engineering
James Cran ..... Foreman of Blacksmithing
Miss C. Jeanette Perry, B.S. (K.S.A.C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.) ..... Bookkeeper
Miss Mamie Alexander, B.S. (K.S.A.C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., FEBRUARY 13, 1904. NO. 17

THE FARM AS A LABORATORY OF NATURE.

FARMING is at once the simplest art and the most complex science. This paradox rests upon the facts that nature is prodigal in her gifts to man, and that she holds the secrets of her methods so closely that with the lapse of centuries they are as yet but dimly disclosed. The savage is content to take the gifts he finds awaiting his hand, and through untold generations his ancestors found them sufficient to their simple needs. As he advanced, his efforts were of the simplest sort—the domestication of animals, the propagation of his food plants, and the repression of their enemies.

The simplest agricultural operations may be performed without tools, the naked hands and feet being sufficient materially to assist in reaching the desired results. But little intelligence is required, beyond a knowledge of the order of nature in the broad lines involved. Even with the advent of simple implements and animal power the art of tillage remained one easily acquired. There is indeed some foundation for the saying, "Anybody can farm." With a propitious season anybody can get something of a crop; he must, in fact, be very successful as a blunderer in order totally to defeat the beneficent operations of sunshine and rain, air and earth, working out the salvation of living things.

But while it is true that anybody can farm, it is true only because there are so many degrees of success in farming, and so many kinds of people in the world. It is sufficient for some rudely to apply a simple art, or without understanding to follow the methods of one who has successfully thought more deeply upon the reasons for things, and has brought a higher degree of intelligence into action. But the progress of the ages has not been due to such as these, but to those who applied clear thinking to accurately observed facts. By them the art of agriculture has been developed to a high state, in which fullest success is won only

by those who have made adequate preparation. Let us consider for a few moments some of the channels through which nature works out her miracles, and which man must intelligently direct if he would farm with the highest success.

All of the natural processes taking place on a farm are referable to one or another of the several sciences. We live in the age of science, that is, of classified knowledge. The multitude of known facts are most advantageously studied when grouped under various headings which are called the sciences, but which are merely parts of the great body of truth. Almost all of these touch agriculture. We can not enter into the refinements of view concerning the ultimate constitution of nature, but for our present purpose we may recognize that matter and energy furnish the basis for all observed phenomena, and that in ordinary observation there is a marked difference between organic and inorganic nature, between the living and the not living.

The most fundamental of the sciences are physics and chemistry, and these two illustrate the interdependence of all. Neither is independent of the other; neither can be studied without at the same time studying the other to a greater or less extent. Chemistry deals with matter, physics with energy or force; yet no chemical changes can take place without accompanying physical changes, and physical changes are recognizable only as changes in the condition of matter. These twin sister sciences are the foundation of agriculture, and in so far as we would understand this art, we must master those sciences. Agriculture illustrates all the degrees of complexity in the manifestations of these sciences, in the transformation of inorganic, non-living matter into organized living things by the interaction of the physical and chemical forces. The soil, the air, the plant, and the animal, are the laboratories of nature in which processes are executed which as yet are far beyond the skill of the scientist to perform except by using the same laboratories.

Consider how water is used. It falls in rain, and settles into the soil, and dissolves the minute percentage of soluble salts that it contains. By the resultant action of gravitation and capillarity this soil water moves up or down or laterally, according to the existing conditions. It thus comes in contact with the roots of plants, and as they absorb it more flows to them. The solution of substances thus brought to the plant world would seem to be a

very simple thing, aud perhaps it is the simplest factor in plant nutrition, yet the nature of such solutions engages the study of the most acute physicists and chemists, and can not be said to be understood fully even yet. After the water has entered the root, what causes its upward flow? Why does it flow downward at times in the performance of its mission of transferring nutriment from one point to another? Why does the plant apparently exclude some of the things in solution for which it has no need, and helplessly admit others in injurious quantities? These are questions about a simple process that are yet waiting for a complete answer.

Water acts more than as a mere solvent; it enters into chemical combination. Within the cells of the leaves of plants combinations and decompositions are taking place that have thus far defied the chemist's art. Carbon dioxide from the air enters, and from it and water that wonderful series of compounds called the carbohydrates is built up. We are not sure of even the first step in that process, though several beautiful theories have been advanced and some experimental evidence adduced. We know that in this wonderful laboratory of living cells a highly complex substance, starch, makes its appearance, that in composition it is equivalent to water plus carbon, and that oxygen is simultaneously set free. The steps in its formation are but dimly seen. We know, too, that this starch goes into solution, and that starch is deposited in the grain of cereals, the tubers of potatoes, and many other places where we have no reason to suppose that it has been produced from carbon dioxide and water, but rather from some soluble product of the starch formed in the leaves.

Water and carbon dioxide do not spontaneously form starch even within the cells of the plant leaves. It is only under the influence of the radiations from the sun that this synthesis takes place. The sun is the great motive power for earthly processes. The radiant energy which for untold ages he has emitted is to a slight extent intercepted by the earth, and to this can be traced the greater part of all that makes the earth what it is—the winds, the rains, the flowing streams, the growing plants, and hence the animals. The energy that reaches one square inch of leaf surface in full sunlight, if entirely used in constructing starch from water and carbon dioxide, would produce about one ten-thousandth of a grain per second. Small as this amount is, when it is multiplied

by the immense leaf surface presented by a cornfield, it accounts for the rapid growth of this plant in favorable weather. The energy of the sun is often referred to as heat or light; strictly speaking it is neither. With the exact nature of radiant energy we need not concern ourselves at present, but it is complex in its quality, and its effects are various, depending on its own inner differences, and upon the nature of the objects upon which it impinges. Upon the retina of the eye it gives us the sensation of light. Passed through a prism it is partially decomposed, and some of its fractions give us the sensation of the various colors of the rainbow, while others do not affect the optic nerve at all. This radiation as it impinges on matter is partly transformed into heat, and thus raises its temperature. On certain objects it brings about chemical changes, that is, the radiant energy is transformed into chemical energy. It is this that is manifested in photography, and it is this that effects the production of starch in the cells of the leaf. While nearly all parts of this energy coming from the sun can bring about this formation of starch, those rays that appear to the eye as yellow light are the most efficient. The so-called chemical rays are much less effective.

This marvelous sun-force doubtless performs other functions less apparent, but as the source of the heat and chemical energy, without which plant growth would be impossible, it is the preeminent factor in agriculture, for plant production is the basis of animal production also.

Wonderful and complex as are the elaborations of nature in plant growth, they are exceeded by those of animal economy. An animal body is a complex mechanism, self constructive, self-repairing, automatic. It obtains its energy from food and oxygen instead of directly from the sun. This energy is manifested in the manifold activities of the animal organism, such as muscular movements both externally and internally applied, the vital processes of digestion, assimilation, secretion, excretion, etc., and probably in any acts of mentality or consciousness. In digestion the complex constituents of foods are resolved into simpler ones by the action of chemical agents in the digestive fluids, and in assimilation these products of digestion are by still more mysterious chemistry synthesized to the tissues peculiar to the animal. By the vital action of the organism, substances in the tissues and fluids are utilized in providing the energy for the various processes of bodily activ-

ity, and are finally changed to water and carbon dioxide in large part, that is, to the very substances with which the plants started to build up their tissues. So the cycle of nature is completed, and through it all, she has been carrying out on the farm, in her animal and vegetable laboratories, physical and chemical transformations that man can imitate but feebly, processes that are of extreme delicacy, and at the same time performed on a gigantic scale.

Such may be said to be the normal state, normal from our point of view. but with the advent of diseases of plants or animals we see introduced by nature additional complications in the processes of her laboratory, complications that the agriculturist must make haste to master and abate. Man's part in all amelioration of his condition is to bring nature's materials and forces together, or to keep them apart, according to the results he desires, and she does the rest. The farmer's problems involve learning how to bring these forces and materials into the desired relation.

J. T. WILLARD, in *Farm Life.*

PROGRESS IN THE PRODUCTION OF HIGH PROTEIN CORN.*

IN previous papers the author has presented some of the results obtained at the Kansas State Agricultural College Experiment Station in analyses of corn incident to efforts to obtain varieties containing higher percentages of protein than the analyses known at present. This paper will include most of the analyses made of corn grown in 1902. The results previous to that year have been published in bulletin No. 107 of the Experiment Station, and the numbers given to the different samples are the same as those used in that bulletin.

The samples are the progeny of crosses made in 1898 among a considerable number of varieties supposed to be superior. The policy has been to reject each year all showing less that two per cent of nitrogen. As average corn contains but 1.84 per cent of nitrogen, the minimum in that which we have propagated would be about ten per cent above the average. The following table shows the percentages of nitrogen in the corn from individual ears analyzed in all but one variety, which was unexpectedly inferior and has not been included:

---

*Read before the Kansas Academy of Science, November 28, 1903.

Number of Cross.	Number of Ear.													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
76.....	2.10	2.30	1.85	1.69	1.83	2.14	1.88	1.88	2.23	2.09	.....	.....	.....	.....
92.....	1.99	2.15	2.34	2.22	2.02	2.53	1.87	2.07	2.22	2.38	.....	.....	.....	.....
138.....	2.11	2.60	.....	2.45	2.18	2.35	2.25	2.27	2.34	.....	.....	.....	.....	.....
322.....	1.69	1.77	2.39	1.93	1.99	2.23	1.99	2.13	2.17	2.16	.....	.....	.....	.....
401.....	2.11	2.33	2.15	2.14	1.87	2.00	2.04	2.25	2.18	2.01	.....	.....	.....	.....
417.....	2.16	2.05	2.23	2.13	.....	.....	2.23	1.82	2.18	.....	.....	.....	.....	.....
485.....	2.29	1.77	2.37	2.06	2.14	2.32	2.14	2.04	.....	2.21	.....	.....	.....	.....
487.....	2.08	2.08	2.14	1.62	1.76	2.10	1.78	.....	1.78	1.82	.....	.....	.....	.....
493.....	1.76	1.83	2.09	1.59	1.93	1.47	2.00	1.87	1.63	2.30	.....	.....	.....	.....
513.....	2.55	2.34	2.33	2.19	2.09	2.42	2.43	2.25	2.00	2.09	.....	.....	.....	.....
518.....	1.93	1.99	2.05	2.35	2.08	1.82	.....	.....	.....	.....	.....	.....	.....	.....
519.....	1.86	2.02	2.01	2.30	2.14	2.30	2.20	2.26	2.12	1.96	.....	.....	.....	.....
535.....	2.14	1.67	2.26	2.12	2.29	1.80	1.77	2.00	2.07	2.11	.....	.....	.....	.....
547.....	2.26	2.35	2.09	2.29	1.88	2.21	1.59	2.06	2.07	2.34	.....	.....	.....	.....
554.....	2.15	2.18	2.25	2.32	1.94	1.94	2.33	2.21	2.44	2.24	.....	.....	.....	.....
545.....	1.90	1.92	1.97	1.58	2.04	2.08	1.85	2.18	1.74	1.63	.....	.....	.....	.....
541.....	....	2.05	1.61	2.12	1.19	1.82	2.60	2.09	2.07	2.21	1.78	2.15	2.03	1.96

The above table includes all the analyses made in each case, and even a cursory examination which will show the great superiority of many of the varieties over average corn. Of the 162 ears only 20 were below 1.84 per cent of nitrogen, and only 51 were below 2 per cent of nitrogen. With a number of varieties none of the ears are of low nitrogen content, *e. g.*, Nos. 138, 92, 513, 519, and 554. The average percentage of nitrogen in all of them is 2.07.

It is generally conceded that an increase in the nitrogen content of corn would be a material addition to its value, yet with all the attention that corn-breeding and corn-judging is receiving at present, comparatively little weight is given to chemical composition. The tendency is altogether too much in the direction of judging upon merely fancy points. Last summer, determinations were made of the nitrogen present in each of the ears of a bushel of Reid's Yellow Dent corn. This is one of the best known and longest bred varieties, and is without doubt an excellent corn in many respects. The following figures show the percentages of nitrogen in each of the 82 ears analyzed:

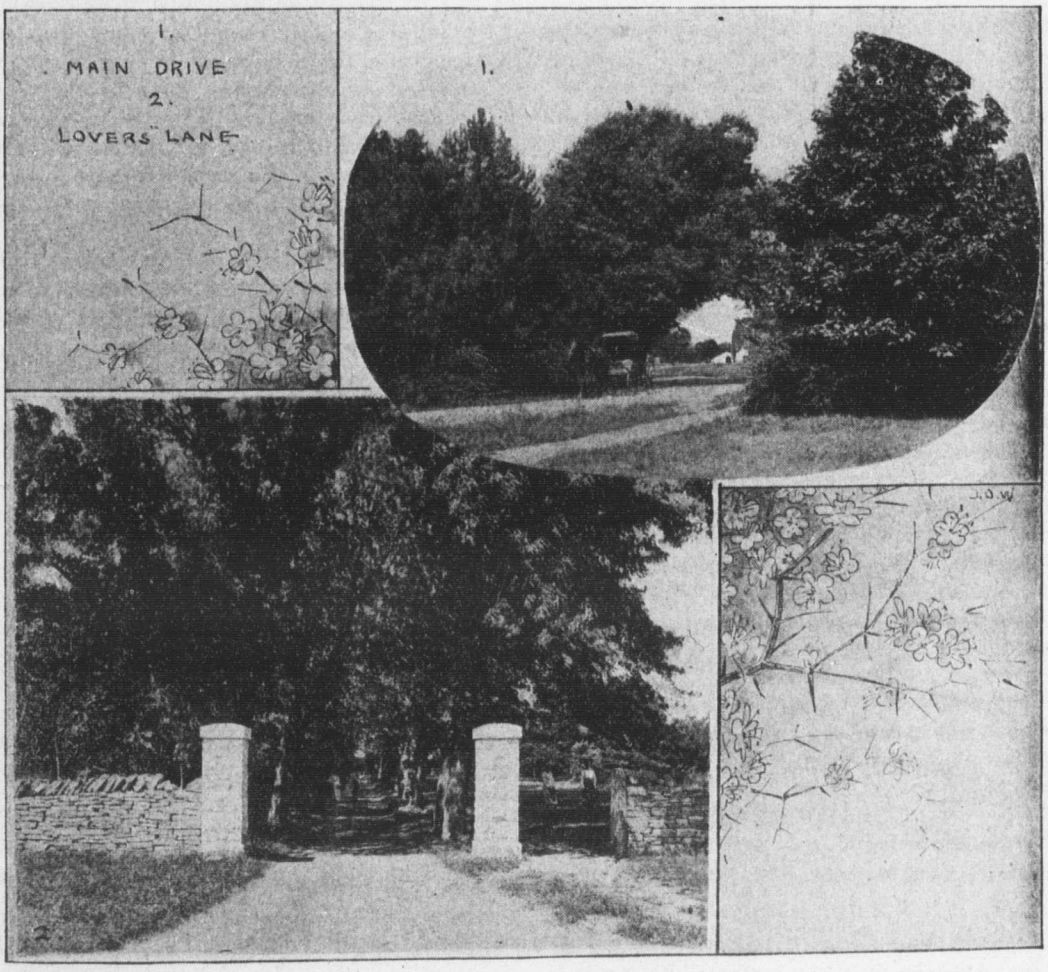
1.26, 1.34, 1.45, 1.46, 1.48, 1.49, 1.51, 1.51, 1.52, 1.52, 1.54, 1.54, 1.55, 1.55, 1.55, 1.55, 1.56, 1.56, 1.57, 1.57, 1.57, 1.58, 1.58, 1.58, 1.59, 1.59, 1.60, 1.60, 1.60, 1.60, 1.60, 1.61, 1.61, 1.61, 1.63, 1.63, 1.64, 1.64, 1.64, 1.64, 1.65, 1.67, 1.68, 1.68, 1.69, 1.69, 1.70, 1.70, 1.73, 1.73, 1.74, 1.75, 1.75, 1.77, 1.77, 1.78, 1.81, 1.83, 1.84, 1.85, 1.85, 1.91, 1.92, 1.92, 1.94, 1.95, 1.96, 1.97, 1.97, 1.98, 1.98, 2.00, 2.01, 2.02, 2.05, 2.06, 2.07, 2.10, 2.13, 2.17.

The average per cent of nitrogen in the Reid's Yellow Dent was but 1.55, or about 16 per cent less than that of average corn. The importance of giving more attention to the composition of a great staple product which is grown for its feeding value and not

for ornament could scarcely be more forcibly presented than by the above figures.

The plan adopted by the Experiment Station at the beginning of this experiment has been criticized by some, it being alleged that stable varieties can never be produced by crossing. It seems to the writer, however, that the results given above show that in respect to nitrogen content, the single quality that has thus far been made the criterion for selection, the plan adopted seems to be abundantly vindicated. It thus remains for us to select from among those of high protein content the specimens which possess the most desirable other qualities.

J. T. WILLARD.



THE PRAIRIE-DOG LAW.

Chapter 378, Session Laws of 1903, passed by the Legislature of Kansas, is as follows:

AN ACT to provide for the extermination of prairie-dogs, prescribing additional duties for the township trustees in counties infested by prairie-dogs, and for the levy and collection of a tax for the purpose of carrying this act into effect.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That in addition to the duties now prescribed by law for township trustees or assessors, in counties infested by prairie-dogs, they shall do and perform the following services: While assessing the property of their respective townships, inspect all the territory infested by prairie-dogs and make an estimate of the probable expense to exterminate the same, and report said findings to the board of county commissioners of their respective counties, which said report will be filed with the county clerk at the time of making their return of their assessment books.

SEC. 2. The county clerk of each of such counties shall present the report of the assessors to the county commissioners at their annual meeting in August of each year, when they convene to make the annual tax levy.

SEC. 3. The commissioners of the respective counties are hereby authorized to levy on real estate assessed for taxation in each township the approximate amount estimated by the several assessors as herein provided, or any part thereof; provided, however, that no assessment for this purpose shall be greater than fifty cents on each $100 valuation as herein provided.

SEC. 4. It shall be the duty of the trustees of the several townships of this State infested with prairie-dogs to enter upon all lands in their respective townships and make diligent efforts to exterminate all prairie-dogs thereon. For the purpose of enabling them to carry into effect the provisions of this act, the trustees are authorized and empowered to employ all such assistance and to purchase the poison recommended and furnished by the State Agricultural Experimental Station, or such appliances and materials as they may deem necessary to exterminate such dogs. The work of such extermination shall all be done under the supervision and direction of the trustee.

SEC. 5. That the trustees shall receive as full compensation for such services the sum of two dollars per day for the time actually and necessarily employed; their assistants to be paid at the rate of one dollar and fifty cents per day for the time actually employed. They shall be paid only out of the fund of the county created by this act for that purpose.

SEC. 6. The township treasurers shall be the custodians of the fund created by this act, and disburse the same on vouchers audited by the township boards at their regular quarterly meetings and warrants drawn on the treasurers for the same; provided, that no part of this fund shall be subject to the payment of claims other than those specified in this act.

SEC. 7. The county treasurers of the several counties of this State are hereby authorized and directed to pay over to the several township treasurers of their respective counties all the moneys collected for the purpose designated in this act, in the mode and manner as other township funds are paid over to said township treasurers.

SEC. 8. It shall be the duty of the county clerk to provide the several township trustees or assessors with suitable blanks for their use in carrying out the provisions of this act, upon which said trustees or assessors shall make their estimates and reports as herein provided.

SEC. 9. Whenever any township of this State shall have rid itself of the prairie-dogs and there shall cease to be a necessity for any future procedure under this act, which question shall be determined by the board of county commissioners, the surplus fund, if any, in the hands of the township treasurers shall be merged into the general township funds of said townships and to be used for general township purposes.

SEC. 10. This act shall take effect and be in force from and after its publication in the official State paper.

Approved March 7, 1903. Published March 24, 1903.

The above not having been published until March 24, 1903, and the assessors' returns having been made for conditions existing on March 1, the law could not go into full effect until March 1, 1904. However, about a dozen counties made levies in August and carried out the provisions of the above act. It is expected

that in all counties infested with prairie-dogs, the assessors will make the returns for 1904 in accordance with the above provisions.

The law of 1901 was not repealed by the last Legislature, and the provisions permitting township boards, upon petition, to appropriate money for destroying prairie-dogs is still in force.

WARBLES OR GRUBS IN CATTLE.

(Press Bulletin No. 131, from Veterinary Department.)

Recent observations made and reports received by this Department indicate that warbles or grubs in cattle are unusually prevalent. In some instances they are reported to have caused the death of young cattle.

Warbles or grubs are the larval form of the ox bot-fly or heel-fly (*Hypoderma lineata*). The grubs or warbles are noticed as little lumps or bunches just beneath the skin of the back. Directly over each warble there is a small pore or opening in the skin through which the grub breathes.

Life History.—The adult heel-fly or warble-fly is a little larger than the common house-fly. In the latter part of the summer she deposits her eggs upon the hair of cattle in the region of the heels. The presence of the flies among cattle causes much annoyance. The animal licks the part and the larvæ are taken into the mouth. From the throat or gullet the small larvæ bore their way through the tissues until they locate beneath the skin of the back, where they increase in size quite rapidly so that the lumps are large enough to be noticed by the latter part of December or early January. In February or March these larvæ or grubs work their way out through the small hole in the skin, fall to the ground, burrow into dirt or litter, pupate, and some weeks later transform into adult flies.

In 1895 it was estimated that 60 per cent of the cattle in Kansas were affected with warbles, and the financial loss by damaged hides was estimated for the United States at from fifty to sixty million dollars. Grubby hides are usually "docked" about one-third.

Warbles are more prevalent in the western part of the State and attack young animals more severely than older cattle.

As the adult flies do not travel far, a cattle owner can free his herd pretty well from these pests by treating them at this season of the year. If other cattle in the immediate vicinity are affected, the adult flies will travel far enough to infest neighboring cattle. All cattle owners should unite to destroy this pest.

Treatment.—Treatment should begin as soon as the warbles are noticed upon the animals' backs. Most of the warbles or grubs can be destroyed by putting turpentine, kerosene, crude petroleum or mercurial ointment in or on the opening through the skin directly over the warble. If the opening is very small, it should be enlarged by using a smooth, pointed stick. A machinist's oil can having a slender nozzle furnishes an excellent method of applying the medicine. By running the cattle through a chute they can be treated quite rapidly. They should be examined in about ten days, and any that escape the first treatment should be destroyed by a second; or better, squeezed out and crushed; or they can be crushed beneath the skin by pinching the lump, or killed by inserting a pointed wire or large blunt-pointed needle. It is important that any grubs squeezed out or escaping naturally should be destroyed or they will transform into adult flies. N. S. MAYO.

POISON FOR PRAIRIE-DOGS AND OTHER RODENTS.

(Press Bulletin No. 130, from General Department, Experiment Station.)

The supply of Press Bulletin No. 119 of the Experiment Station, containing information about our "Poison for Prairie-Dogs and Pocket-Gophers," having been exhausted, this bulletin is issued to answer the numerous inquiries we are receiving about the poison.

The legislature, at its last session, made provision for continuing the work of preparing and distributing poison from the College at the cost of the materials contained in it. During the past two years, since January 7, 1902, the demand for poison has continued steady, and large quantities have been sold, especially for the destruction of prairie-dogs and pocket-gophers. Up to the present time we have consumed about 1200 pounds of strychnine and over a half ton of potassium cyanide in manufacturing the poison. From 600,000 to 700,000 acres of land, formerly infested with prairie-dogs, have been entirely reclaimed, while a partial destruction of them has been accomplished over a much larger area. The destruction of pocket-gophers has been accomplished over many small and widely scattered areas, including some of the best alfalfa ranches in the State. This work, however, has thus far not extended over sufficiently large areas to be permanent; and further and united efforts, only, will produce results which will prevent loss to alfalfa growers from the presence of this pest.

For Prairie-Dogs.—The poison is put up in half-gallon cans. They have labels which describe the contents, name the ingredients, the quantity of each, the manner of preparing, and also give careful directions for using.

The strychnine in this poison is not in solution, but is held in suspension in the syrup. It settles to the bottom of the can, after the manner of lead in ordinary mixed paint. A common error in using it is to pour out a portion of the liquid without first having *thoroughly* shaken or stirred it. When thus used, this top part of the liquid is not sufficiently poisonous to kill all the animals that eat of it. If it is first stirred or thoroughly shaken, a part of the can may be used as successfully as the whole of it.

We recommend that the area of "dog town" to be poisoned be gone over very carefully, placing the bait at the outside of all occupied burrows, as directed. If some of the animals escape the first application, a change of bait to Kafir-corn, broken corn, or corn-meal is recommended for those that remain. If after a second application any animals still remain, carbon bisulphide will probably be the most effective means of destroying the remnant.

The price of the prairie-dog poison is *$1.75 per can*, delivered at the freight or express office in Manhattan. Three or less cans may be sent by express, wrapped in paper, but a larger number must be boxed. Any number of cans may be sent by freight, but they must be boxed. No charge is made for packing. A can of the poison weighs five and a half pounds. It will poison a bushel of wheat, and be enough for about 1200 burrows (from 120 to 160 acres).

For Pocket Gophers.—We have found that this poison is excellent for destroying pocket-gophers, and that it is even more convenient to use than the dry strychnine and potatoes or raisins recommended in Press Bulletin No. 109. The poisoned bait is to be inserted into the run-ways of the gophers in the same manner as described in that bulletin.

The poison for gophers is put up in quart cans, and by leaving out one

ingredient (potassium cyanide) the strychnine is kept in solution. The liquid is therefore equally poisonous throughout, and any part of the contents of the can may be successfully used. A quart will poison a half-bushel of grain, and the price of it is *90 cents per can.*

Pour boiling water over a half-bushel of shelled corn and let it stand over night to swell and soften the grain. Then drain off all the water possible, and pour the quart of poison and a cup of syrup over the corn. Add a few pounds of corn-meal and mix all thoroughly. The mass of corn should be somewhat sticky, and there should be no dry corn-meal present.

Make openings into the run-ways of the gophers with a pointed stick, and with a spoon drop a few kernels of the corn down each opening. A spade or shovel handle shod with an iron point and having a bar for the foot about sixteen inches from the point is recommended for making the holes into the burrows. No digging or covering of holes is required.



The best time to poison gophers is in October and November, when they are most active; but they may also be successfully poisoned in the spring or at any time when they are working. It is not usually necessary to go over the ground with poison more than once; but unless neighboring farmers coöperate, the work will have to be attended to about once in two years.

For Mice and Prairie Squirrels.—We have recently had considerable complaint of the destruction of young orchards by field-mice. Experiments in the use of this poison to kill the mice have been very successful. We use the gopher poison with wheat as a bait. The poisoned wheat is eaten readily, and two or three applications will easily destroy all of the pests in an orchard. For prairie squirrels the poison is used in the same manner, the wheat being placed near the openings of their burrows.

For Rabbits.—Corn poisoned as directed for pocket-gophers has been used successfully for these orchard pests. Kafir-corn is also a good bait, but perhaps the most successful method of all is to use prunes, pieces of apple, or sweet-potato as a bait. Dry powdered strychnine may be rubbed on the cut surface of the bait or our liquid poison poured over the pieces.

For Rats.—Rats about barns or corn-cribs are hard to poison because they have such an abundance of food at hand; yet they will often leave unpoisoned grain to eat that which has been poisoned with our poison. While we do not claim that it will entirely exterminate rats about farm premises, we are sure that the pest can be greatly reduced in numbers by its use. As in the operations with this poison, or any other form of strychnine, against all rodents living in burrows, the great majority of the victims die in the burrows and are never seen. For this reason it is not a desirable means of destroying mice in occupied dwellings. In all cases of its use great care is necessary to avoid placing the poison or baited food where it might be found by domestic animals or persons ignorant of its deadly character.

Orders for poison should be accompanied by payment, and should state for what purpose the poison is desired. Make money orders or drafts payable to Miss Lorena E. Clemons, who is Secretary of the College. Method of shipment preferred should also be stated. The poison cannot be sent by mail, and we do not ship it outside of Kansas. D. E. LANTZ, Agent.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The Sophomores had a class party on February 8, in Kedzie Hall.

Doctor Mayo spent two days dipping cattle last week near Zeandale.

Mrs. J. D. Walters has just recovered from a severe attack of pneumonia.

Doctor Mayo went to Sharon Springs Saturday on Experiment Station work.

The Department of Chemistry has added a new storage battery to its equipment.

Sunday and Monday Doctor Mayo was away on State work at Peabody and Liberal.

The date of issue of the INDUSTRIALIST has been changed from Tuesday to Saturday.

Professor Ten Eyck attended a farmers' institute at Belleville on February 10 and 11.

Miss Minis and Professor Popenoe attended a farmers' institute at Gardner last week.

Professor Dickens and Doctor Barnes assisted in a farmers' institute at Rome last week.

The Veterinary Department has just issued a press bulletin on "Grubs or Warbles in Cattle."

The carpenter-shop is making fifty new drawing boards for the Department of Industrial Art.

The mid-term examinations are being held to-day and the results will be known next Tuesday.

President Nichols went to Ellsworth last Tuesday to consult with Regent Fairchild concerning the course of study for the next catalogue.

The carpenter-shop has received an order from the department of mathematics of Ottawa University for a pair of blackboard compasses, a model of the sphere and one of the cone with its characteristic sections.

The last number of the *Kansas Farmer* published a half-tone portrait of C. C. Elling, of the senior class—the second prize winner in the stock-judging contest at Chicago.

The baseball team will go to Lindsborg on March 28, which is the Monday after final examinations. The boys will be given their expenses and tickets to the Messiah concert. There is some talk of an excursion.—*Students' Herald.*

Captain A. S. Rowan, formerly military instructor at this College, now stationed at Vancouver barracks, has been ordered with his regiment to Panama. The captain will be perfectly at home among the Spaniards and under the palms of the south.

The Experiment Station has just issued Press Bulletin No. 130, on the subject of "Poison for Prairie-dogs and Other Rodents"—mostly a reprint of Bulletin No. 119, the supply of which has become exhausted. There are inquiries coming in from the western part of the State almost daily for information on this subject. The sale of poison is brisk.

Professor Mayo's treatise on "The Care of Animals" should be in the hands of every farmer and stockraiser in Kansas. It is rare that so much of good science and common-sense can be found combined in one volume, especially on such a practical subject. The book reads almost like a novel, though every page is filled with modern medical facts and sound hygienic rules.

The severe winter weather of the past two weeks has seriously checked the work of the contractors of the two new buildings. Practically no work has been done on the Auditorium during this time. Contractor Winter, of the Dairy Hall, has finished the concreting of the floors of the laboratories and done some plastering in the basement rooms, but all outside work was completely stopped. The different building operations in the cattle-yards have also been checked. If the ground-hog is the cause of this "spell," Professor Lantz, of the prairie-dog-poison laboratory, ought to be instructed by the Regents to give the "spell-binder" a good big dose of his mixture.

REDUCED RATES TO CALIFORNIA, MARCH 1 TO APRIL 30.—That long-looked-for California opportunity is here at last. March 1 to April 30, the Rock Island System will sell "tourist" tickets to principal points in California at these low rates: $25 from Missouri River Points; $25 from Manhattan, Kan. Tickets are good in tourist sleepers, which the Rock Island runs daily, Chicago and Kansas City to Los Angeles and San Francisco by way of El Paso; three times a week via Colorado Springs and Salt Lake City. March and April are the pleasantest months of the California year—doubly so because, at home, they are usually the very opposite. Tickets and berths at all Rock Island ticket offices, or by addressing A. E. Cooper, D. P. A., Topeka, or J. A. Stewart, G. A. P. D., Kansas City. 17-27.

The Sunday edition of the Topeka *Daily Capital* publishes a picture of Senior Student Miss Wilma Cross, of this College, the prize winner in the College intersociety contest.

Foreman Louis Wabnitz, of the machine-shops, is still unable to meet his classes on account of a severe attack of inflammatory rheumatism, though he reports some improvement. He is able to walk about the house.

The Faculty, at their meeting of last Saturday, made some changes in the time-table for next spring term. The hours for the forenoon work were moved forward, and chapel will begin at 8:15 in place of 8:45. The noon hour will be from 11:50 to 1:00 and the sixth hour will end at 2:40. Military drill will occupy the time from 2:45 to 3:30 P. M., and the seventh and eighth hours will follow from 3:35 till 5:10. It is expected that this arrangement will be better in many ways than the present one. It will give the drill classes a chance to walk on a dry campus and reserve the morning hours for mental work. The following is the schedule of periods as adopted:

Chapel	8:15 to 8:30
First hour	8:35 to 9:20
Second hour	9:25 to 10:10
Third hour	10:15 to 11:00
Fourth hour	11:05 to 11:50
Noon	11:50 to 1:00
Fifth hour	1:05 to 1:50
Sixth hour	1:55 to 2:40
Drill	2:45 to 3:30
Seventh hour	3:35 to 4.20
Eighth hour	4:25 to 5:10

ALUMNI AND FORMER STUDENTS.

Inez Palmer-Barrows, '96, in requesting a change of address states that "after four years' sojourn on the farm, myself, my husband and three children are permanently located at Washington (Kansas), our former home. Any friends of my K. S. A. C. days will be heartily welcome at any time."

Through the courtesy of C. S. Davis, formerly superintendent of the Printing Department here, we have received a copy of *Trades Unionist* for February 4, which contains an account of the observance of Kansas Day by the Washington Association of Alumni of this institution. W. L. Hall, '98, presided and the speech of the evening was made by Geo. F. Thompson.

Ida Quinby-Gardiner, '86, while en route between California and Oklahoma, met Mrs. Lillian Stephens Nagle, who was a student here in 1872-'73. She is now living at Denison, Tex., where her husband is postmaster. She is a member of the XXI Club, which erected its own building at a cost of $12,000 and maintains a free public library and reading-room. She was very much interested in hearing news of the College.

Historical Society

VOL. 30 NO. 18

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - *PRES. E. R. NICHOLS*
Local Editor, - - *PROF. J. D. WALTERS*
Alumni Editor, - *PROF. J. T. WILLARD*

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B BROWN, (Boston Music School), A.M. (Olivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M.A.C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S.A.C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Public Speaking
OSCAR ERF, B.S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U.S.A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I.T.U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K.S.A.C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K.S.A.C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K.S.A.C.) ..... Director of Physical Training
MISS LORENA E. CLEMONS, B.S. (K.S.A.C.) ..... Secretary

JACOB LUND, M.S. (K.S.A.C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave .... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K.S.A.C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K.S.A.C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K.S.A.C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.) ..... Assistant in Music
William Anderson, B.S. (K.S.A.C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K.S.A.C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K.S.A.C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K.S.A.C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N.H.C.A.&M.A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K.S.A.C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K.S.A.C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo. C. Wheeler, B.S. (K.S.A.C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K.S.A.C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Sumner M. Manley, S.B. (Mass. Inst. Tech.) ..... Assistant in Mechanical Engineering
James Cran ..... Foreman of Blacksmithing
Miss C. Jeanette Perry, B.S. (K.S.A.C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K.S.A.C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K.S.A.C.) ..... Bookkeeper
Miss Mamie Alexander, B.S. (K.S.A.C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K.S.A.C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., FEBRUARY 20, 1904. NO. 18

THE NATURE OF ORATORY.

IN ORDER to attain success in any art it is necessary to have a clear and correct conception of what that art is. This principle applies no less truly to the art of oratory than it does to the art of painting.

The relation of oratory to rhetoric in general is not difficult to understand. Indeed, oratory is rhetoric turned in a particular direction. It is the species of which rhetoric is the genus; or more precisely, rhetoric is the family, while persuasive discourse is the genus, and oratory the species.

What is an oration? Its general idea may be developed by combining the following essential factors:

1. An oration is an *oral* address. It is not a story; it is not an essay; it is not a treatise. It has elements that differentiate it from all other forms of discourse; and part of these elements exist because it is designed for delivery in a face-to-face and an eye-to-eye contact with an audience. This fact gives it peculiarities of structure and peculiarities of style, that adapt it to effective vocal presentation, but that would not always be desirable or even allowable in other forms of discourse. The speaker, therefore, has to meet peculiar conditions; he has both advantages and disadvantages that do not pertain to the writer. He enjoys the advantages of the magnetic presence, the kindling eye, the thrilling voice, the suggestive gesture; on the other hand he labors under the disadvantages incident to the necessity of delivering his soul in a single utterance, with no opportunity to elaborate his thought or give to its expression those graces of style that the essayist or the novelist, who writes at leisure, employs for the instruction and pleasure of those who read at leisure. Because it is an oral address, therefore, the oration must possess all the ease, flexibility, rhythm, directness, intensity and fire, appropriate to earnest, extemporaneous speech, and at the same time it must proceed on

those broad and general lines of thought adapted to arouse the interest of the hearer, fit his understanding and direct his purpose.

Some writers, prominent among whom may be named Edmund Burke, have claimed that there should be no differences of style between spoken and written discourse. But Burke himself, although professedly exemplifying his theory, actually proved the rule; for, while he adorned his speeches with all the fullness of thought and richness of imagery appropriate to written discourse, he usually emptied the House of Commons. The speeches that are read with delight were not infrequently heard with indifference.

2. In the second place, an oration is an oral discourse *on a worthy theme.* Not all subjects are suitable for oratorical treatment. They lack dignity, or they lack seriousness, or they lack that elevation of thought essential to real eloquence. They may be too literary in substance, appropriate to the essay or the book, but requiring too elaborate treatment for the platform. They may be too philosophical, too abstract, or too technical, and thus be incapable of impressing the popular mind, of stirring the popular imagination, of arousing the popular feeling, or of moving the popular will.

To admit of oratorical treatment a subject must be worthy of noble thought. No trivial topic will answer. A student once offered the plan of an oration on the subject, "The Dog as Man's Best Friend," stating that his purpose was to induce his hearers to buy a dog. It is needless to say that the disscussion of such a theme is not oratory. That student may have been a "howling success" as a door-keeper of a menagerie, but he would hardly be likely to develop into a Demosthenes. The harangue of an auctioneer or a street peddler is never synonymous with eloquence. If the theme is ignoble, no art can make the discourse noble. At the best it will be either bombast or burlesque.

The intimate relation between the theme and its treatment cannot be too strongly emphasized. It by no means follows because all orations are oral addresses, that all oral addresses are orations. Such addresses may be simply expositions of some truth. They may be merely essays in criticism or in history orally delivered; the method of presentation does not in itself classify them as orations. A subject to be suitable for oratorical treatment must be susceptible of such development as shall appeal to the whole spiritual

nature of the hearer—to his intellect, his sensibilities and his will. Then and only then is it a "worthy" subject.

3. In the third place, an oration is an oral discourse on a worthy theme, whose *aim is to influence the will of the hearer.* It is a speech pronounced in order to persuade. As such it belongs to the loftiest type of prose discourse. It may and not improbably will contain exposition and argument, but it does not find its end in these forms of discourse. They are satisfied when they have enlightened the understanding and convinced the reason. Oratory may both subserve these purposes and may likewise kindle the imagination and arouse the emotions; but it does not stop there. It not only appeals to the intellect and stirs the sensibilities, but most of all it lays hold on the will.

It is this feature more than any other that differentiates oratory from other types of discourse. One may pronounce an oral address on a worthy theme, but unless his deliverance is designed and adapted to move the will it cannot properly be classed as oratory. Webster truly describes eloquence, which is the soul of oratory, as "urging the whole man onward, right onward *to his object.*" He who fails to attain that "object" fails in his ultimate purpose as an orator. The crown of eloquence encircles the brow, not of him that "draws a bow at a venture," but of him that consciously and successfully seeks to bring down the game. The true orator, as the late Pres. E. G. Robinson, himself no mean orator, was wont to say, "puts a hook in the nose of his audience and leads it;" or to use the expressive phrase of Pres. Martin B. Anderson, the orator by the power of public speech "brings things to pass." Thus it was the highest praise of eloquence when, after listening to a fiery philippic of Demosthenes, the Athenians raised the cry: "Up, let us march against Philip!"

Adaptation.

One factor in the general idea of oratory, as thus developed, is that of adaptation. The speech, in both theme and treatment, should be adapted to move the determination of the hearer. Indeed, it is this element that lies at the basis of all discussion of oratory as an art. For, since the art does not find its end in itself but is practiced with a view of gaining the willing coöperation of the hearer, any treatment of the subject must be mainly occupied with a consideration of how best to accomplish this purpose. How shall I gain the respect and confidence of my hearers? How

shall I remove their indifference or prejudice toward my subject? How shall I excite their interest and convince their reason? How shall I arouse and control their passions? How shall I do all these things so as to lead them, ultimately, to the desired decision of will? These are questions that the orator must, consciously or unconsciously, ask himself in preparing and pronouncing every speech. And the answer to these questions involves all the considerations that have to do with the finding, selecting and arranging of material, with the choice of words, the construction of sentences, the use of figures, the employment of illustrations, the final delivery—in a word, with all the considerations that involve questions of thought, of style, and of effective utterance.

Types of Oratory.

The third characteristic of an oration, as above defined, raises the inquiry whether we do not too much limit the province of oratory by describing it as always an appeal to the will. How, then, shall we class those addresses that do not aim at definite action? Doctor Nott's great speech on the death of Hamilton, Webster's address on "The First Settlement of New England"—were not these orations?

This inquiry suggests a distinction that needs to be recognized between the different types of oratory—a distinction based on the recognized difference between speeches calling for immediate and definite decision and action and those not so calling. This distinction gives rise to a twofold division, to which have been given the names: Determinate Oratory and Demonstrative Oratory.

1. *Determinate Oratory.* Under this name may be included all those examples of persuasive speech, that anticipate direct and specific action on the part of those addressed.

The action contemplated in this class of discourse may culminate in a vote, a resolution, a verdict, or a silent yet conscious determination to pursue a certain course. But it is definite, and the operation of the will is positive and immediate. Such is the oratory of deliberative assemblies, where the action under discussion has to do with public policy; the oratory of the platform, where the end is to gain votes in an approaching election, or to secure coöperation in some proposed undertaking; the oratory of the bar, whose aim is to secure a verdict of a jury or a favorable decision from a court; much of the oratory of the pulpit, whose conscious purpose is to bring those who are not Christians to an

acceptance of the Christian faith and those who are Christians to resolve upon a life of closer Christian obedience and service. Thus, wherever displayed, determinate oratory includes all those speeches that seek for a specific decision of the will.

2. The other great type of oratorical discourse has been called *Demonstrative Oratory.* Under this name we may include all those speeches that do not contemplate a definite action at a given time on the part of the hearer, but that aim, rather, to bring about in his mind an unexpressed and possibly unformulated decision to live differently, to cherish nobler or at least other sentiments, to hold a different attitude, to cultivate better habits or be a better man. Although no definite action is aimed at, this type of oratory is none the less an appeal to the will; the chief difference is that it seeks for a decision which shall manifest itself, not in a single immediate action, so much as in a course of life, in an attitude. The decision of the will may not be formulated in speech and the hearer may hardly be conscious that he has formed a decision. It is manifest, rather, in a general bracing of the will in regard to the question at issue. The speech, like a rivulet flowing into a river, contributes a real, even if an imperceptible accretion to the stream of the hearer's determination.

Not a little preaching and much platform speaking may be classed as demonstrative oratory. Here is where Doctor Nott's "Death of Hamilton" and Webster's "First Settlement of New England" belong. Indeed most speeches that serve to arouse public sentiment, to quicken patriotism, to awaken admiration for exalted character or high achievement, to stir and stimulate a purpose for right living and noble endeavor, are of this type.

The Parts of an Oration.

An oration, like every other form of well constructed discourse, is made up of a variety of parts. The number of parts that shall be recognized varies according to circumstances, to the kinds of oratory, to the minuteness of analysis desired, and to other factors that need not now be enumerated. For example, a sermon has an element not found in other forms of public speech in its text, which may properly be regarded as a part of the sermon. The analysis will, also, depend upon the use of terms. No two writers will precisely agree in their nomenclature. They will use words in different senses and give different names to the same idea. Aristotle recognized as parts of an oration, the Introduction, the Prop-

osition, the Proof, and the Conclusion, but he claimed that neither the Introduction nor the Conclusion was essential. Quintilian, the great Latin rhetorician, on the other hand, enumerated five parts, which he named the Introduction, the Narration, the Proof, the Refutation, and the Conclusion. The Narration belonged especially to the oratory of the bar; it was what in modern times is termed the lawyer's statement of his case and covered substantially the ground indicated by Aristotle's Proposition. So, likewise, the Proof and Refutation in Quintilian's analysis are simply the positive and negative sides of one process.

In the present discussion it is desired to avoid extended and minute analysis, and to proceed as much as may be on broad and general lines. For the sake of simplicity, therefore, we need to recognize only four main divisions of a completed oration: I. The Introduction. II. The Proposition or Object. III. The Discussion. IV. The Conclusion.

I say the "completed" oration reveals these parts, because I wish to distinguish between the finished product and the skeleton on which that product is built. The skeleton, or plan, includes and sharply defines all the details and particulars; it states the title, theme, object, introduction, discussion with its various partitions, and the nature of the conclusion; but in the speech as pronounced, some of these details are buried. They are present, giving coherence, order, symmetry, progress, strength, and unity to the discourse, but they do not usually appear prominently to the hearer. What he realizes, so far as the topic now under discussion is concerned, is that the discourse has a beginning, a pervading general thought, the development of that thought, and an appropriate ending, and that these different parts, while vitally connected, are nevertheless distinct, one from another. If he be an intelligent listener he knows where one ends and another begins. For purposes of simplicity and convenience, therefore, these four parts may be considered as constituting the groundwork of a typical oration. Of these parts it is the present purpose to discuss only the first—the Introduction. Nor is it the intention to discuss the method of development and the details of style of even this part, but simply to present briefly its general nature and office.

The Introduction, as its name implies, is that part at the beginning of an oration which "leads into" the discourse and prepares

the way for the presentation and proposed discussion of the main topic. Its aim is, simply, briefly, naturally and effectively to interest the audience in the theme and prepare it for listening sympathetically to the development of that theme. It is the nexus between the theme and the hearers. The speaker has these factors before him—his theme and his audience. How shall he bring these factors together? This is the problem he must set for himself. The process of solving this problem is found in the Introduction. That it be solved is one of supreme importance.

An audience must be led into the subject without shock. All agreeable mental processes are gradual, and for an orator to plunge without preface of some sort into the heat of a discussion would be as contrary to the law of mind as for the sun to burst from midnight darkness to noonday splendor without the gentle gradations of the dawn would be contrary to the law of the physical universe. The Introduction performs the office of a herald, gracefully to announce and impressively to marshal in the full procession of the thought.

But the introduction does more than this. It serves to arouse sympathy on the part of the audience with the speaker's own feelings toward his subject. He, presumably, is not only interested in the question in hand but excited over it; his hearers, on the contrary, are comparatively indifferent if not positively antagonistic in their attitude toward that question. It will never do to plunge without prelude into the full blaze of the discussion. The heat would be too great; instead of warming the sympathies of the audience it would rather scorch and wither them. "Behold how great a conflagration a little fire kindleth!" The orator must begin not with the great conflagration but with the little fire. He may be, himself, profoundly stirred; indeed he must be, if he would achieve the highest oratorical success; but to arouse his hearers to a similar frame of mind is a gradual process. He must first overcome their inertia. The engineer who pulls the throttle of the locomotive wide open at the first touch invites disaster. He does not move the train; he breaks the coupling, and if the machine does not jump the track it goes tearing along the course alone. The introduction to a speech is the gradual opening of the valve, by which the wise orator puts his audience in motion, so to speak, with himself and prepares them to move without jar in full harmony with his own thought and feeling to the chosen destination.

Once more, the introduction affords the speaker an opportunity of putting not only his theme but himself on good terms with his audience. If his hearers are indifferent or hostile to him, or distrustful of him, he can do nothing with them. They do not separate the speech from the speaker. He must remove their prejudices before he can move them. The introduction affords him an opportunity of doing this. It gives him a chance to convince them of his frankness and sincerity, of his honesty of purpose and method, of his profound conviction of the truth and importance of the position he holds, of the uprightness of his character, of his mastery of the subject in hand. Such, then, is the threefold function of the introduction: it prepares the audience for the intellectual apprehension of and interest in the subject; it brings them into sympathy of feeling with the speaker towards the subject; it enables the speaker to place himself on good terms with his hearers. All this is what Cicero meant by his famous assertion that the purpose of the exordium is, '*reddere auditores benevolos, attentos, dociles*"—that is, to render the hearers "well-disposed" toward the speaker, "attentive" to what he may say, and "teachable," or receptive in regard to the sentiments he may have to express. At least one and perhaps all of these purposes will be exemplified and subserved in every effective introduction.

Some excellent modern illustrations of introductions that fulfill these purposes are to be found in the speeches of Henry Ward Beecher, delivered in Great Britain during the Civil War. Perhaps I cannot better close this discussion than by quoting a part of his Liverpool speech. The hall was packed by a turbulent and hostile mob, sympathizers with the secessionists, and determined to break up the meeting. When the speaker appeared he was greeted with jeers, catcalls, yells, hisses, insults, dead cats, and decayed vegetables. Whenever there was a lull in the uproar, the speaker would manage, with great good nature and supreme tact, to make himself heard for a sentence or two, in which he would appeal to the traditional British sentiment of fair play. He said in part:

"Personally, it is a matter of very little consequence to me whether I speak here to-night or not. (Laughter and cheers.) But one thing is very certain, if you do permit me to speak here to-night, you will hear very plain talking. (Applause and hisses.) You will not find a man—(interruption)—you will not find me a man that dared to speak about Great Britain three thousand miles

off, and then is afraid to speak to Great Britain when he stands on her shores. (Immense applause and hisses.) And if I do not mistake the tone and temper of Englishmen, they had rather have a man who apposes them in a manly way—(applause from all parts of the hall) —than a sneak that agrees with them in an unmanly way. (Applause, and "Bravo!") Now, if I can carry you with me by sound convictions, I shall be immensely glad—(applause); but if I cannot carry you with me by facts and sound arguments, I do not wish you to go with me at all; and all that I ask is simply *Fair Play.*" (Applause, and a voice: "You shall have it, too.")

Thus Mr. Beecher gained a hearing, rendered his audience "well-disposed, attentive, teachable," and transformed a turbulent, jeering mob, into an enthusiastic, cheering company of listeners, clambering wildly over the seats, at the close of the address, to shake the orator by the hand. CLARK M. BRINK.

THE VALUE OF HOME PRACTICE.

IT IS impossible to overestimate the importance of private practice in the home. It is the foundation upon which anyone must begin in order to make a successful musician, and it is only through this medium that he can attain any proficiency in the art. For improvement in any line of music, nothing is more essential than systematic practice.

Irregularity in practice hours is a serious drawback to progress. The person who plays just as long as he or she feels like it rarely develops into a fine musician. An ambitious pupil sometimes makes a spurt and practices many hours for a day or two, straining muscles and tiring the brain; then comes a reaction and no work is done for several days. Little is accomplished in this way. But it is not easy to keep the practice hours regular. The studen‘ as so many hours in the class room, and lessons to be prepared at home, that naturally the practice hour is put off. The only chance for music is a rigid economy of all the minutes. The day's work should be laid out carefully, and if account is taken of all the minutes, it will be found that music has a chance after all.

A clever teacher compares the practice of scales to the heavy iron used to press out wrinkles in clothing: it presses out the technical wrinkles in playing. Like everything else worth having, however, scales require time if they are to be mastered thoroughly. The study of scales is not only a necessary part of the musician's daily routine but, rightly conducted, forms a practice

of great interest. Scales should not be practiced for their own sake alone, but for the advantage that systematic practice of these musical figures offer. Scales and arpeggios are peculiarly adapted to the piano, and no one should expect to be called a player who cannot "run scales" with various shades of tone color, and with speed in the different forms of rhythmic accent.

The beginner in music should have a good instrument; he must have a reasonable amount of natural talent for music; a good teacher is indispensable to him; but above all this it is very necessary that he should devote a certain amount of time each day to practice. In nearly every case it may be truly said that a musician's success is governed by the amount of time he is willing to devote to practice.

Take, for instance, the young man who undertakes to learn the cornet. He must practice not only on rehearsal nights, but at home daily, in order to develop his lips, lungs, and facial muscles, and get them in condition to make and control the different notes throughout the entire compass of his instrument, and also be able to stand the strain of playing a long engagement with the band or orchestra.

Any member of a band or orchestra who will not practice at home is doing the other members of the organization a great injustice. On account of lack of practice, his lips are too soft to get a good tone, and soon give out entirely. A great many members say: "Oh, I can look at my part and tell how it ought to be played." No matter if you think you can, there is a great difference in looking over a part and rendering it in a proper manner.

The member who does not practice generally causes the leader more trouble than all the rest. He is dull in reading his part, and when the band plays in public he makes the discord, and generally does the band more harm than good; and of course the leader is always blamed, when it is really not his fault, for if the offending member had taken his instructor's advice the discords would not have been made.

There is nothing more astonishing than the capacity of most students to forget what they are told. Such things cause an earnest teacher to grow bewildered. Even the most famous teachers cannot insure thorough work on the part of pupils. The quickness of some pupils to forget often reminds one of the speed with which a touch of perfume evaporates. Touch the tip of your

finger to a bottle of some perfume, then touch a piece of paper; come again in an hour, what is there?

No teacher guarantees that his ideas will remain like indelible ink; the retaining of ideas must be done by the student, and can only be done by keen attention to details—and daily practice.

It has been said that, "No art is so easily forgotten as music." A great pianist once remarked, that if he should neglect his practice for one day he could detect it in his playing; if he should neglect it for two days, the musicians would notice it; if for three days, the public would be aware of it. If this is true of a great artist, how much more is it so of the beginner. Again, applying this case to the cornet, the bad results would be multiplied many times over, for if there is anything disgusting to the musical ear it is a discordant cornet. Now a word to the tenor and alto players in a band. It is j[illegible]as important for them to practice as is for the soloist. No matter how simple your part may be, play it *well*, and bear in mind that the best soloist in the world cannot do himself justice with a poor accompaniment.

Berlioz, the drummer, once said, "I can play nothing but the drums, but I can play them well." Most amateur musicians think the drummer inferior to the other instrumentalists; imagining that anyone can beat the bass drum. The bass drummer marks the time for the whole organization and it is impossible for a band to play unless the drummer understands his business, for although it is not necessary for him to have a knowledge of pitch notation, yet he must be well versed in the principles of music, time, and rhythm.

All that has been said is equally true of any instrument one may choose. Remember, that genius is the ability to work; and practice—lots of persistent practice—is the only way that will finally open the door of success.

R. H. BROWN.

The Printing Department has produced a pamphlet of tables for the identification of minerals, that has been in use in the laboratory work in chemistry this term. As a specimen of somewhat difficult job printing the department has made a marked success. The tables themselves are the result of the experience of half a dozen teachers in the Chemical Department extending over the last twenty years, and are used with complete satisfaction by the classes.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.
Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83].....Jewell City
HON. J. O. TULLOSS ['99].....Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

The College band has had its picture taken.

Assistant Scheffer, of the Zoölogy Department, is the proud father of a bran-new citizen.

The annual senior-junior reception will be held in Kedzie Hall on Monday evening, February 22.

The mechanical engineers have tested the steam guage of the boilers of the Manhattan Electric Light Company.

The Board committee, appointed to revise the courses of study, will meet at the College on Saturday, February 27.

The measles and mumps are among us again, and tonsilitis, earache and toothache are claiming a victim now and then.

Pres. E. R. Nichols went to Norton on Wednesday evening in answer to a court supœna to testify in the Berry-Dewey case.

The last number of the College *Jayhawker* contains a life-like picture of Janitor Lewis—the busy, jovial, modest, patient, kindly chief of our broom brigade.

Geo. A. Dean, '95, and others of the Department of Entomology at this College, are preparing an exhibit of economic entomology for the St. Louis Exposition. The exhibit will consist of wood-boring insects. The insects, with enlarged drawings and specimens of wood in which they work, will be mounted in show-cases furnished by the government. The department will also have an interesting exhibit of "The Mound-building Prairie Ant." The exhibit will be placed in the government building in the department of experiment stations.—*Jayhawker.*

REDUCED RATES TO CALIFORNIA, MARCH 1 TO APRIL 30.—That long-looked-for California opportunity is here at last. March 1 to April 30, the Rock Island System will sell "tourist" tickets to principal points in California at these low rates: $25 from Missouri River Points; $25 from Manhattan, Kan. Tickets are good in tourist sleepers, which the Rock Island runs daily, Chicago and Kansas City to Los Angeles and San Francisco by way of El Paso; three times a week via Colorado Springs and Salt Lake City. March and April are the pleasantest months of the California year—doubly so because, at home, they are usually the very opposite. Tickets and berths at all Rock Island ticket offices, or by addressing A. E. Cooper, D. P. A., Topeka, or J. A. Stewart, G. A. P. D., Kansas City. 17-27.

Manhattan is making arrangements to bore for coal or gas. The test hole will be sunk in the grove of Mr. Brous, east of the Blue river, and it is intended to go at least six hundred feet below the level of the ocean. The work will be undertaken by the Manhattan Commercial Club.

Died, on February 18, student Willard Berger. The deceased was nineteen years old and had been a member of the freshman class since last fall. About two weeks ago he took sick with mumps and measles, which later developed into pneumonia. His father, who lives at Ford, Ford county, Kan., was telegraphed for and arrived in time to see his son depart from life. The Franklin Literary Society and the members of the freshmen class accompanied the body on Friday evening from the boarding-house, the Ingraham place, at the northwest corner of the city park, to the railroad depot, and Y. M. C. A. Secretary McLean and Professor Walters spoke a few appropriate words to the assembled friends. Berger was a bright and promising young man, well liked by all who came in contact with him. The College extends its sympathy to the bereaved parents.

Ex-president Thomas E. Will of this College, at present the president of the American Socialist College at Wichita, writes to Professor Walters: "Apropos of your item in the last INDUSTRIALIST regarding Revolutionary Ancestors of Kansans, it may be of interest to note the following: General Artemas Ward, appointed commander-in-chief of the Massachusetts forces May 19, 1775, nominally in command at Bunker Hill, and in command of the forces besieging Boston until the arrival of General Washington, was a great-great-grandfather of Mrs. Marie Rogers-Will, wife of the writer. Two great-grandfathers of the writer fought for American independence in the Revolutionary War. When a student at Harvard, I was admitted on an exhibit of the requisite data to the 'Massachusetts Society of the Sons of the American Revolution.' The parchment testifying to this fact, and bearing date of October 14, 1889, National number 848, State number 247, being still in my possession."

The St. Valentine entertainment, given on Monday evening by the Cupid Entertainment Concert Company, of seventy members, under the direction of Professor Brown, was a pronounced success. It was given as a compliment and benefit to the Y. W. C. A. of the College. The decorations were unique and appropriate. The members of the orchestra were seated amid evergreens, and the background was a wall of white, perforated with five heart-shaped openings, artistically decorated. The large central heart contained Cupid suspended in mid-air, with bow and arrow ready to pierce the heart of his victim. The smaller openings were filled by the faces of characters illustrating the reading, "The Heart Confessions of a Nurse Girl." The program consisted of selections by the College orchestra, College band, solos, duet, quartet, recitations, and illustrated reading. The variety of the selections greatly pleased the audience, which manifested its appreciation by frequent applause.

Mrs. Grace M. Perry, '80, writes to Professor Walters, from Pocatello, Idaho, that she—his "number 56 in the first-hour class, year 1877"—has a boy thirteen years old who is very ready with the pencil and wishes to begin a systematic course in geometrical drawing. She says that they are pleasantly located at Pocatello and that they "eagerly read the newsy pages of the INDUSTRIALIST."

J. A. Lewis, '85, chief engineer and superintendent of construction of the George A. Fuller Building Company, of New York, sends us a large folio pamphlet descriptive of a twenty-story sky-scraper named Forty-Two-Broadway, the construction of which cost $3,500,000 and which was erected—put together—under his supervision. The building is evidently a unique one. It is the most complete effort of this kind in the world, the cumulative result of all that is known in the art of building, and is equipped with every convenience that human ingenuity can devise. The structure is absolutely fire-proof and well lighted and ventilated. It has its own electric-light plant, twelve elevators, about fifty lavatories and over five hundred complete office apartments.

ALUMNI AND FORMER STUDENTS.

Willis M. Wright, '87, and Sarah Cottrell-Wright, '94, are the parents of a son, born January 31, 1904.

Chas. H. Thompson, '93, assistant in botany at Leland Stanford Jr. University, has been appointed to take charge of the department of succulent plants at the Missouri Botanical Garden.

Mr. and Mrs. C. H. Kirshner, Kansas City, Mo., are happy in the birth of a son, George Fairchild, February 15. Mrs. Kirshner will be remembered as Agnes Fairchild, third year in 1881.

G. W. Waters, '86, writes from Dillon, Colo., where he has been leading a quiet life building up a cattle ranch in the mountains. He gives special attention to cheese and butter making He thinks of returning to the College in the near future for some special work in these subjects. He will at least see that his three sons and one daughter come.

As an outgrowth of the Paris Exposition, the order of "Merite Agricole" has been tendered by France to M. A. Carleton, '87, cerealist of the Department of Agriculture. As United States citizens are not allowed to accept foreign decorations without the consent of Congress, the secretary of state has recommended to Congress that Mr. Carleton be allowed to receive this.

J. W. Shartel, '84, is now president of the Southwestern Electrical Association and of the Oklahoma Traction Company. He is also interested in other electrical railway companies. Mr. Shartel thinks that there are great possibilities for electric railways in Oklahoma and Indian Territory. A recent number of the *Southern Industrial and Lumber Review* contains an article by him on this subject.

Historical Society

VOL. 30 NO. 19

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE . . . .
AGRICULTURAL COLLEGE

◆ ◆ ◆

Editor-in-Chief, - *PRES. E. R. NICHOLS*
Local Editor, - - *PROF. J. D. WALTERS*
Alumni Editor, - *PROF. J. T. WILLARD*

◆ ◆ ◆

Published by
PRINTING DEPARTMENT
J. D. RICKMAN, Supt.

◆ ◆ ◆

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

BOARD OF INSTRUCTION

ERNEST R. NICHOLS, A.M. (University of Iowa) ..... President
JOHN D. WALTERS, M.S. (K. S. A. C.) ..... Professor of Industrial Art and Designing
ALEXANDER B BROWN, (Boston Music School), A.M. (Clivet ..... Professor of Music
JULIUS T. WILLARD, M.S. (K. S. A. C.) ..... Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn) ..... Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College) ..... Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.) ..... Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K. S. A. C.) ..... Professor of Botany
WILLIAM A. MCKEEVER, A.M. (U. of K.) ..... Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
NELSON S. MAYO, M.S. (M. A. C.), D.V.S. (Chicago Vet. Coll.) .. Prof. of Veterinary Science
ALBERT DICKENS, M.S. (K. S. A. C.) ..... Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M (U. of R.), Ph.D. (Univ. of City of New York) ... Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin) ..... Professor of Agriculture, Supt. of Farm
MRS HENRIETTA W. CALVIN, B.S. (K.S. A. C.) ..... Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.) ..... Professor of History and Economics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College) ..... Professor of Public Speaking
OSCAR ERF, B. S. Agr. (Ohio University) ..... Professor of Dairy and Animal Husbandry
PEARL M. SHAFFER, First Lieutenant, Thirteenth Infantry, U. S. A. .. Prof. of Military Science
JOSHUA D. RICKMAN, (I. T. U.) ..... Superintendent of Printing
BENJ. S. MCFARLAND. A.M. (Miami) ..... Principal Preparatory Department
MISS MARIAN JONES, M.S. (K. S. A. C.) ..... Superintendent of Domestic Art
MISS MARGARET J. MINIS, B.S. (K. S. A. C.) ..... Librarian
MISS ESTELLA M. FEARON, B.S. (K. S. A. C.) ..... Director of Physical Training

MISS LORENA E. CLEMONS, B.S. (K. S. A. C.) ..... Secretary

JACOB LUND, M.S. (K. S. A. C.) ..... Superintendent Heat and Power Department
MISS JOSEPHINE C. HARPER, A.M. (Bethany), Absent on leave ... Asst. Prof. of Mathematics
MISS ALICE RUPP, (Indiana State Normal) ..... Assistant Professor of English
CLARENCE L. BARNES, D.V.M. (Cornell University) .... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago) ..... Assistant Professor of Physics
OSCAR H. HALSTEAD, B.S. (K. S. A. C.) ..... Assistant Professor of Mathematics
CHARLES E. PAUL, S.B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering

---

Miss Ada Rice, B.S. (K. S. A. C.) ..... Instructor in English
Walter E. Mathewson, B.S. (K. S. A. C.) ..... Instructor in Chemistry
Frank M. McClenahan, A.M. (Yale) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Robert H. Brown, B.M. (Kan. Con. of Music), B.S. (K. S. A. C.) ..... Assistant in Music
William Anderson, B.S. (K. S. A. C.) ..... Assistant in Mathematics
Miss Gertrude Barnes ..... Assistant Librarian
William Baxter ..... Foreman of Greenhouses
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Hetty G. Evans, (Mass. Normal Art School) ..... Assistant in Drawing
Vernon M. Shoesmith, B.S. (Mich. Agr. Coll.) ..... Assistant in Agriculture
Miss Eleanor Harris, B.M. (Chicago College of Music) ..... Assistant in Music
Ambrose E. Ridenour, B.S. (K. S. A. C.) ..... Foreman in Foundry
Geo. A. Dean, B.S. (K. S. A. C.) ..... Assistant in Entomology
Leslie F. Paull, A.M. (Brown University) ..... Assistant in Botany
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Maud Coe, B.S. (K. S. A. C.) ..... Assistant in Domestic Art
Roscoe H. Shaw, B.S. (N. H. C. A. & M. A.) ..... Assistant Chemist, Experiment Station
Theo. H. Scheffer, A.M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C.) ..... Assistant in Printing
Miss Mildred Shaw, A.B. (Washburn) ..... Assistant in Mathematics
Miss Caroline Hopps, Ph.B. (University of Chicago) ..... Assistant in English
Miss Helen Thompson, B.S. (K. S. A. C.) ..... Assistant in Preparatory Department
Miss Ella Weeks, A.B. (U. of K.) ..... Assistant in Drawing
Miss Flora Rose (Framingham Mass. Normal) ..... Assistant in Domestic Science
Miss Clara Pancake, B.S. (K. S. A. C.) ..... Assistant in Domestic Science
R. F. Booth, B.S. (Northwestern) ..... Assistant in Physics
R. J. Kinzer, B.S. Agr. (Iowa State College) ..... Assistant in Animal Husbandry
Geo C. Wheeler, B.S. (K. S. A. C.) ..... Assistant in Feeding Experiments
Miss Florence H. Vail, B.S. (K. S. A. C.) ..... Assistant in Chemistry
Robert E. Eastman, M.S. (Cornell University) ..... Assistant in Horticulture
Sumner M. Manley, S.B. (Mass Inst. Tech.) ..... Assistant in Mechanical Engineering
James Cran ..... Foreman of Blacksmithing
Miss C. Jeanette Perry, B.S. (K. S. A. C.) ..... Executive Clerk
Miss Alice M. Melton, B.S. (K. S. A. C.) ..... Clerk in Director's Office
Miss Minerva Blachly, B.S. (K. S. A. C.) ..... Bookkeeper
Miss Mamie Alexander, B.S. (K. S. A. C.) ..... Clerk in Farm Department
Miss Sarah Hougham, B.S. (K. S. A. C.) ..... Clerk in Botanical Department
Charles Hughes ..... Secretary to the President
William R. Lewis ..... Janitor

THE INDUSTRIALIST.

VOL. 30. MANHATTAN, KAN., FEBRUARY 27, 1904. NO. 19

PROOF THAT EDUCATION PAYS.

ASSUMING that a man's ability is his capital and his wages the interest he draws on this capital, it has been ascertained by James M. Dodge, and explained by him as president to the American Society of Mechanical Engineers, that technical training increases earning capacity in the following measure:

Kind of Labor.	Initial capital	Rise to	Returns interest per week.
Unskilled.....	$3,000 00	$10,200 00	$10 20
Shop trained.....	3,000 00	15,800 00	15 80
Trade school.....	3,000 00	22,000 00	22 00
Technical school.	3,000 00	43,000 00	43 00

In discussing the value of technical education as illustrated by these figures Mr. Dodge said:

"Obtaining data from which incontrovertible conclusions can be drawn is now comparatively easy, but a few years ago it was impossible. We are all prone to take extreme cases of success or failure as the basis for our opinions, and lose sight of the fact that it is the average man whose career shows the true force and direction of the current. For convenience of comparison I will outline the actual progress made by four groups of men working in the mechanic arts—the unskilled labor group, the shop-trained or apprentice group, the trade-school group, the technical-school group, and give the results obtained. Each group I will refer to as an individual.

"First, the laborer, with but primitive and rudimentary training, working under the immediate and constant supervision of a boss and earning $10.20 per week at the age of 22, his line remains horizontal through the period of his usefulness. Data are lacking as to his progress before he reaches the age of 22.

"The second, the apprentice or representative of the shop-trained group, of good health and habits, entering a machine-shop at the age of 16, and earning an average wage of $3 a week for fifty weeks per year, which is about the number actually worked, is $150, or 5 per cent on $3,000. This, then, is his potential or invested value, upon which he draws his interest on pay-days.

"We note now that his accumulated experience enables him to make more rapid progress, and from the age of 20 to 21 we find that his pay has increased to $13.20 a week and has potential value to $13,200. He is now approaching his goal and his line of progress does not continue at the same angle that it has followed for the last few years, but deflects towards the horizontal; and at the age of 24 we find him earning $15.80 a week and his potential value $15.800. In other words, in eight years he has increased his potential value $12,800. Observation shows that 5 per cent of the apprentices acquiring the machinist trade rise above the line made by our average man; 35 per cent follow the line closely, and that during the period of training 20 per cent leave of their own accord, and as near as can be ascertained go to other shops and continue in the line originally selected; 40 per cent, however, are found unworthy or incompetent, and are dismissed, probably never rising to the $15.80 line.

"The third group of young men are those fortunate enough to have had the opportunity of entering a trade school, which they do at 16 years of age, devoting the next three years of their lives, or until they are 19 years of age, acquiring a trade under competent instruction, and at the same time adding to their store of rudimentary theoretical education. At the age of 19 a trades-school man enters the machine shop and can command $12 per week, equal to the apprentice at 21 years of age, and quickly makes his employment profitable to his employer.

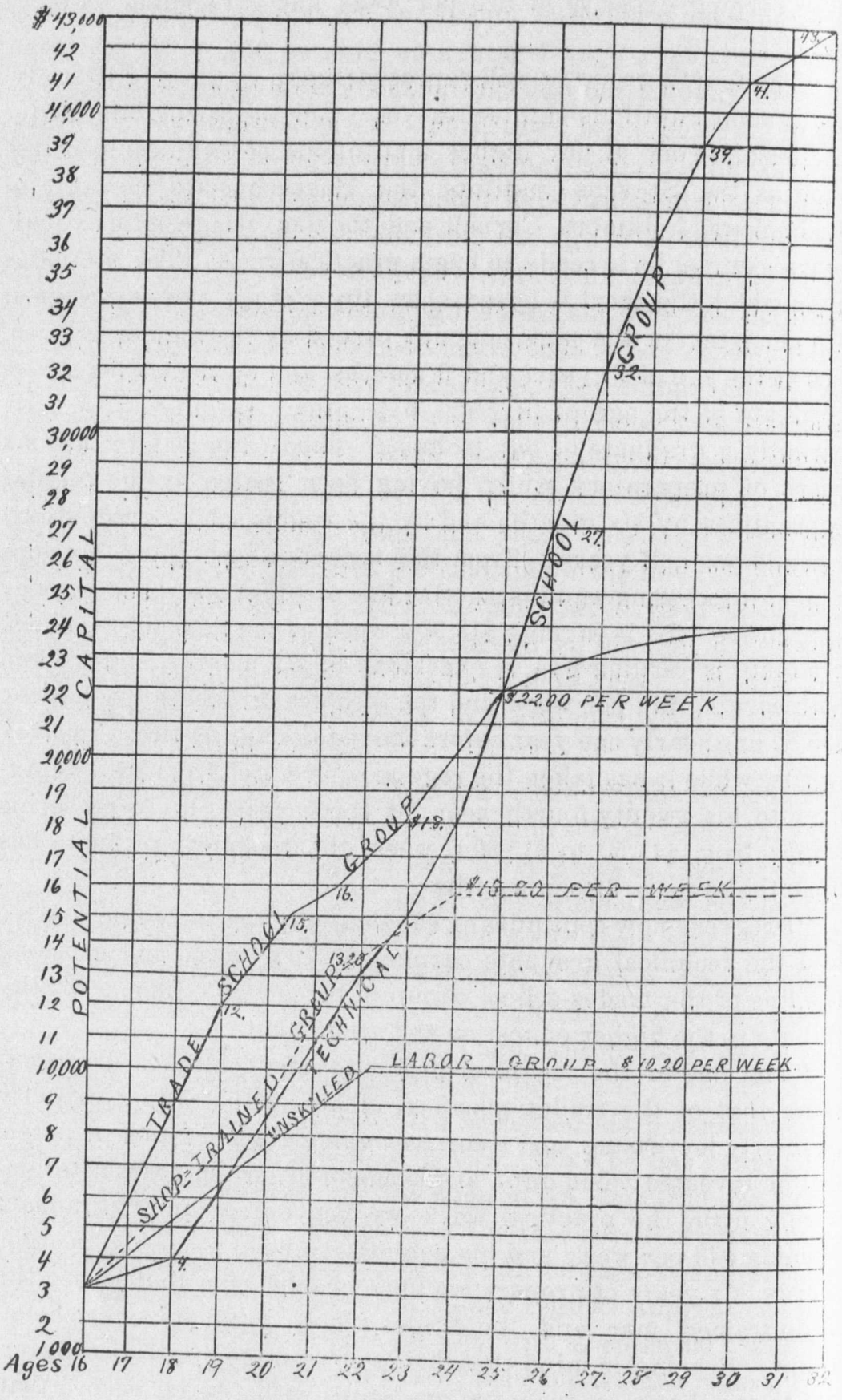
"The three years in school have increased his potential value from $3,000 to $12,000, a gain of $9,000. Thus he has caught up with the apprentice entering the shop at 16, and who has been working for five years. Progress of the trades-school group now follows a line which diverges from that of the regular apprentice, and by the time $15.80 is earned by the regular apprentice, the trades-school graduate is earning $20, with a potential value of $20,000, or $4,200 greater than that of the shop-trained man. The trades-school line continues at substantially the same angle up

to an earning capacity of $22 per week, and a potential value of $22,000.

"The fourth group we will represent again by a boy of 16 studying at school until his eighteenth year, and preparing himself for admission to one of our higher institutions of technical learning, such as the Stevens institute, the Massachusetts Institute of Technology, Columbia, Cornell and the like, where, after a four-years' course, he is ready to begin practical work. The statistics upon which the chart is based show the average starting wage at $13 per week, or the same amount earned by the regular apprentice at the age of 21 years and 6 months, and by the trades-school graduate at the age of 19 years 6 months. In other words, apparently a graduate of our technical schools has lost by his six years of preparatory study, having been beaten by the regular apprentices by six months and by the trades-school graduate by two and one-half years. From this time, however, there develops a most interesting and instructive line of progress. The regular apprentice, who is earning $13.50 a week at the time the technical graduate is earning $13, is overtaken in six months, and we find both earning $14 per week, and the technical graduate reaches the $15.80 line nearly one year before the regular apprentice. In other words, while it has taken the regular apprentice from his twenty-first to his twenty-fourth year, or three years, to increase his wages from $11.50 to $15.80 a week, the technical graduate has done the same in fifteen months.

"Progress now continues on substantially the same line, and we find the technical graduate earning $22 per week, and crossing the line of the trades-school group in three years' time, a worthy tribute to the higher education and attainment.

"The line of the technical graduate now continues divergent from that of the trades-school graduate, with earning capacity regularly increasing, and a corresponding augmentation of potential or invested value until, at the age of 32, or ten years after entering upon the practical work, we find our technical graduate earning $43 per week, and his potential value at $43,000. In other words, six years of preparation have enabled him to distance the shop-trained man and the trades-school graduate overwhelmingly. Bearing in mind that this is an average line, it is of interest to say that most technical graduates with a better record than


POTENTIAL CAPITAL
$43,000
42
41
40,000
39
38
37
36
35
34
33
32
31
30,000
29
28
27
26
25
24
23
22
21
20,000
19
18
17
16
15
14
13
12
11
10,000
9
8
7
6
5
4
3
2
1000
Ages 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
SCHOOL GROUP
41.
39.
32.
27.
$22.00 PER WEEK.
GROUP
$18.
16.
$18.00 PER WEEK
15.
TRADE SCHOOL
13.
SHOP-TRAINED GROUP
TECHNICAL
UNSKILLED
LABOR GROUP $10.20 PER WEEK.
4.

the one in the chart have devoted even more time to their preparation, either by study or by shop work, after graduation.

"Thus we see clearly that preparation pays, and that it pays in dollars and cents, and that even a long term of years spent in proper study and technical training is a good investment from every point of view.

"The highest wages are paid to the man through whose ability the largest number of other men may be most profitably employed. He does his work with his brain."—*Chicago Sunday Tribune.*

The above article and diagram are well worth the careful study of every young man. Most young men have a vague notion that an education will pay, but the temptation to earn money is too strong for many. The technical school puts off the earning peroid longest, and the young man at sixteen sees that even the unskilled laborer has a better immediate chance to earn money. The apprentice or shop-trained laborer seems to offer considerable advantage in the way of money earning. Not until the age of twenty-two and a half is reached does the technical graduate overtake the apprentice. The trade-school offers still better opportunity for earning money. It is not till the age of twenty-five that the technical graduate overtakes the trade-school graduate. We have too many young men in this college taking special courses, short courses, or short cuts which are usually names for short-sighted policy. The apprentices in this college are fitting themselves for $15.80 per week salaries instead of $43.00. There never was a time when the saying, "Where there's a will there's a way," was more true than now. With education as easily obtainable as it is in the Kansas State Agricultural College and many other similar institutions, no young man under twenty-five has any business to say he cannot get a college education. Instead of a college education being the exception it should be the rule, and it will be as soon as parents and young men and women realize its value. What the diagram shows in favor of education for mechanical pursuits is equally true of all other occupations. E. R. NICHOLS.

The machine-shop is making a lot of hand tools, consisting of about one hundred fifty pieces, for the College exhibit at the World's Fair. No finer tools have ever been made in any corner of the world than this set.

A HIGHER STANDARD OF STUDENT WORK.

A LITTLE careful investigation will convince one that there is often a wide variation in the standard of work done by schools that are nominally of the same grade. It is my opinion, moreover, that an instructor cannot reasonably expect first-class results from the recitation until the students under his tuition come to regard their work of preparation as serious business. Not that I would make the life of the average college student more sober and sedate. He must have time for amusements and other forms of recreation, but these diversions ought not to intrench upon the time set apart for study and sleep.

There are in this College two or three obstacles to scholarly attainment, and they are more or less unavoidable under present circumstances. Among these are: (*a*) An over-crowded curriculum. This condition is the natural result of two or three well-known causes. First, the low entrance requirements made necessary in order to connect with the common schools, from which the majority of our students come. Second, the ever-increasing tendency to enrich the course of study so that it may meet present-day requirements. It is needless to say that those who have the matter in charge are making every reasonable effort to relieve this condition. (*b*) An interrupted routine of work. It is practically impossible to arrange the assignment of the average student so that on every College day he may have the same work in amount and kind. This condition confuses the student not a little in that his habit is prevented from exercising its proper function. (*c*) Lack of a method. After examining the daily program of five hundred twenty-five first-year students, I am convinced that much time and energy are wasted on account of a lack of any conscious plan of study and work.

With a view to improving these conditions, if possible, each member of the freshman class has been given a card on which is printed the following:

1. HAVE A PROGRAM.—The student who follows the same program of study and work every day thereby calls to his assistance a powerful agency, viz., habit. It is this way: For instance, if you study algebra every day from 2 to 3 p. m. you will soon find the mind better prepared to master algebra at that hour than at any other. Try it!

2. HAVE A METHOD.—Every paragraph you read has, or ought

to have, a central or specific idea. *Find this point and note it carefully.* Before beginning the day's duties, have in mind an ideal standard of excellence, and then strive to reach it. In this way one accumulates mental power, generates his own enthusiasm, and contributes directly to the building of his own character.

3. TRAIN YOUR ATTENTION.—Positively refuse to permit your attention to be drawn away from the task it is engaged upon. Herein lies the secret of power, and of much so-called genius. If the mind wanders, bring it back to the point and hold it there persistently. See that your efforts in this respect are not hindered by sluggishness resulting from insufficient sleep or improper ventilation.

4. TEST YOUR STRENGTH.—One of the best tests of mind concentration comes during an effort to study in the library. About half of those who pretend to study there waste their time in the childish habit of gazing at those who are moving about the room. If you can't possibly resist the temptation to stare at others, close the book and feast your eyes for a few minutes, then study diligently for awhile; but don't try to do both at once.

5. BE ORDERLY AND SYSTEMATIC.—Good order and system about the study room are aids to scholarly work, while disorderliness and untidiness are indicative of incoherent thinking. Moreover, these bad qualities, if allowed to continue, will become a menace to your own success later in life and a great annoyance to some one who will have to live with you. Motto: A place for everything and everything in its place.

6. BE PUNCTUAL.—Tardiness and irregularity of attendance to duty are two bad habits that may be easily broken if the matter is undertaken in time; but, if permitted to go on unchecked, they are sure to bring about loss of interest, and discouragement. To meet all of one's appointments promptly is an evidence of stability of character and a good indication of worthy attainment.

7. TAKE EXERCISE.—To deny yourself time and recreation is to dull and enfeeble the intellect. When sluggish, a brisk five-minute walk may be the means of filling the lungs with fresh air and of accelerating the circulation. This will give increased brain power and clearer thinking. And then, don't neglect to take regularly seven or eight hours of unbroken sleep.

8. BE CORDIAL.—On the proper occasion, always greet others with good cheer and cordiality. Such conduct puts a warm glow

into the heart and begets a buoyancy of spirit that tends to refresh and clarify the mind for the work that is before it. The best students are usually active in some form of college society. Loafing, however, is abominable.

9. CULTIVATE PURE-MINDEDNESS.—There is so much that is inspiring and ennobling to think about. Therefore discard at once and forever every unworthy and debasing thought. Plain, simple living, high thinking, and spirituality make up a trio of real virtues, each of which aids the others. Even ten minutes, given to some form of soul culture before retiring every night, will, in time, bring noticeable results in spiritual growth.

10. REMEMBER.—Real geniuses are pretty scarce. Perhaps you may never become one. But you can become a member of the great class of faithful, diligent *workers*, and they are the people who are moving the world to-day. Nearly all the students who fail in their classes do so on account of lack of diligence; very few from lack of ability. If you would master a subject easily, pay special attention to its fundamental principles given at the beginning of the term.

Facsimile of program to be filled out by the student.

A. M.		P. M.	
6:00 to 7:00....	Study ——	Fifth hour....	
7:00 to 7:30....	Breakfast.	Sixth hour...	
7:30 to 8:15...		2:45 to 3:30...	Drill.
8:15 to 8:30....	Chapel.	Seventh hour,	
First hour		Eighth hour..	
Second hour..		5:30 to 7:00...	Supper; recreation.
Third hour ...		7:00 to 8:00...	Study ——
Fourth hour ..		8:00 to 9:00...	Study ——
11:50 to 1:00...	Dinner; recreation.	9:00 to 10:00..	Study ——
		10:00.....	Retire.

W. A. MCKEEVER.

GRADING IN STOCK-JUDGING CONTESTS.

THE first essential in stock-judging contests is a logical scheme of grading the different possible placings of the animals. In the following I have assumed fifty points for the correct placing of the animals. Since there are one hundred twenty different combinations of five things, all taken at a time, it follows that there must be many duplicate numbers. It is interesting to note that this system gives all the numbers from 0 to 50 except 20, 46, and 48. It is also assumed in this discussion that the animals are placed correctly when 1 is at the left and the others follow in the proper order: 1-2-3-4-5.

The following table gives rank of the animals, and the figures below each give amounts deducted for each animal removed one or more places:

Rank of Animal.	1	2	3	4	5
Loss for moving one place.....	4	3	2	1	0
Loss for moving two places.....	10	8	6	4	2
Loss for moving three places.....	18	15	12	9	6
Loss for moving four places.....	26	24	20	16	12

From the above table, exchanging animals 4 and 5 would leave a total score of 49; exchanging 3 and 4 would give a score of 47; exchanging 3 and 5 would give a score of 42; exchanging 1 and 5 would give a score of 12, etc. In these figures it is assumed that the placing of the animals is in the order of importance, beginning with No. 1, and in order not to get into absurdities as indicated by later analysis, it is necessary to add a greater penalty for each succeeding point the animal is removed out of place. Thus, for removing No. 1 one place the penalty is 4 points. For moving another place further out of position the penalty is 6 points, and the further moving of one place the penalty is 8 points.

This is as it should be, since it is possible that 1 and 2 might be so near equal that their proper placing would be quite difficult. This equality is not nearly as likely to extend to the first three. Exchanging 1 and 2 deducts 7 points, while exchanging 1 and 3 deducts 16 points.

The reasons for selecting the above numbers to be deducted for each animal moved out of its proper place will appear if we state the problem as follows:

Rank of Animal.	1	2	3	4	5
Loss for moving one place..	a	b	c	d	e
Loss for moving two places	f	g	h	i	j
Loss for moving three places.	k	l	*m*	n	o
Loss for moving four places...	p	*q*	*r*	*s*	t

It is evident from an analysis of the situation that the sum of the numbers in the places p-g i t must equal 50, so that when the animals are placed in the worst possible position, namely, 5-4-3-2-1, the score shall be 0. The number i must be greater than the sum of c and d, in order that the placing 5 3-4-2-1 may rank higher than the worst placing as indicated above; d plus o must be greater than i plus j, so that the placing 1-4-5-3-2 will be greater than the placing 1-5-4 3-2; and in the same way i plus t must be greater than n plus o, and c plus l greater than g plus h, etc. The italicized figures are not used, since it is impossible to move No. 3 more than two places, and Nos. 2 and 4 more than three places. The numbers to be subtracted in the first table are all derived in logical order, the one exception being 26, which should be 28 for the sake of symmetry, but since the series does not extend further to the left, and the italicized numbers *12-16-20-24* are not used, this variation is of no consequence. g plus p is still greater than k plus l, as it should be. This gives for the placing 3-4-5-1-2 a score of 5, and the placing 3-4 5-2-1 a score of 4.

The following table contains the values of the different placings:

Placing.	Value.	Placing.	Value.	Placing.	Value.	Placing.	Value.	Placing.	Value.
1 2 3 4 5.....	50	2 1 3 4 5....	43	3 1 2 4 5....	37	4 1 2 3 5....	32	5 1 2 3 4...	28
1 2 3 5 4.....	49	2 1 3 5 4....	42	3 1 2 5 4....	36	4 1 2 5 3...	28	5 1 2 4 3....	25
1 2 4 3 5.....	47	2 1 4 3 5...	40	3 1 4 2 5....	31	4 1 3 2 5....	29	5 1 3 2 4....	25
1 2 4 5 3.....	43	2 1 4 5 3....	36	3 1 4 5 2...	24	4 1 3 5 2....	22	5 1 3 4 2....	19
1 2 5 3 4 ...	45	2 1 5 3 4....	38	3 1 5 2 4....	29	4 1 5 2 3....	21	5 1 4 2 3....	19
1 2 5 4 3.....	42	2 1 5 4 3....	35	3 1 5 4 2....	23	4 1 5 3 2....	18	5 1 4 3 2...	16
1 3 2 4 5.....	45	2 3 1 4 5 ...	35	3 2 1 4 5....	34	4 2 1 3 5....	29	5 2 1 3 4 ...	25
1 3 2 5 4.. ..	44	2 3 1 5 4....	34	3 2 1 5 4...	33	4 2 1 5 3....	25	5 2 1 4 3....	22
1 3 4 2 5.....	39	2 3 4 1 5....	26	3 2 4 1 5....	25	4 2 3 1 5....	23	5 2 3 1 4....	19
1 3 4 5 2.....	32	2 3 4 5 1....	18	3 2 4 5 1....	17	4 2 3 5 1 ...	15	5 2 3 4 1....	12
1 3 5 2 4.....	37	2 3 5 1 4....	24	3 2 5 1 4....	23	4 2 5 1 3....	15	5 2 4 1 3....	13
1 3 5 4 2.....	31	2 3 5 4 1....	17	3 2 5 4 1....	16	4 2 5 3 1....	11	5 2 4 3 1....	9
1 4 2 3 5.....	41	2 4 1 3 5....	31	3 4 1 2 5...	22	4 3 1 2 5....	21	5 3 1 2 4....	17
1 4 2 5 3.....	37	2 4 1 5 3 ..	27	3 4 1 5 2...	15	4 3 1 5 2....	14	5 3 1 4 2....	11
1 4 3 2 5.....	38	2 4 3 1 5...	25	3 4 2 1 5....	19	4 3 2 1 5...	18	5 3 2 1 4....	14
1 4 3 5 2.....	31	2 4 3 5 1....	17	3 4 2 5 1....	11	4 3 2 5 1....	10	5 3 2 4 1....	7
1 4 5 2 3.	30	2 4 5 1 3 ...	17	3 4 5 1 2....	5	4 3 5 1 2....	4	5 3 4 1 2....	2
1 4 5 3 2.....	27	2 4 5 3 1...	13	3 4 5 2 1....	4	4 3 5 2 1....	3	5 3 4 2 1....	1
1 5 2 3 4.....	38	2 5 1 3 4 ...	28	3 5 1 2 4....	19	4 5 1 2 3....	11	5 4 1 2 3....	10
1 5 2 4 3.....	35	2 5 1 4 3....	25	3 5 1 4 2....	13	4 5 1 3 2....	8	5 4 1 3 2....	7
1 5 3 2 4... ..	35	2 5 3 1 4....	22	3 5 2 1 4....	16	4 5 2 1 3....	8	5 4 2 1 3....	7
1 5 3 4 2.....	29	2 5 3 4 1....	15	3 5 2 4 1....	9	4 5 2 3 1....	4	5 4 2 3 1....	3
1 5 4 2 3.....	29	2 5 4 1 3 ...	16	3 5 4 1 2....	4	4 5 3 1 2....	2	5 4 3 1 2....	1
1 5 4 3 2	26	2 5 4 3 1....	12	3 5 4 2 1...	3	4 5 3 2 1....	1	5 4 3 2 1....	0

E. R. NICHOLS, *in Breeders' Gazette.*

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. J. S. MCDOWELL, President, Smith Center
HON. C. E. FRIEND ['88], Vice-Pres.... Soldier
HON. R. J. BROCK ['91], Loan Com'r, Manhattan
HON. E. T. FAIRCHILD.....Ellsworth
HON. J. W. BERRY ['83] .....Jewell City
HON. J. O. TULLOSS ['99]..... Sedan
PRES. E. R. NICHOLS, Sec. *ex-officio*, Manhattan

LOCAL NOTES.

Manhattan is preparing to build another flour mill—number 3.

President Nichols is working on the time schedule for spring term.

Professor McKeever is billed for a lecture in the Michigan City lecture course.

Mrs. Calvin and Assistant Dean attended a farmers' institute at Oneida last week.

The machine-shop is doing some repair work on the engine of the Manhattan Mills.

The carpenter-shop has just completed a neat plant case for the Botanical Department.

Professor Willard and Miss Rose attended a farmers' institute at Arkansas City this week.

The Webster entertainment will be given Monday night, February 29, at the Manhattan opera-house.

The machine-shop has lately made sixty-three feet of well casing for a bored well for the Robinson place, on College Hill.

Professor Willard was at the Hays Branch Experiment Station and Garden City last week to make some irrigation investigation.

The College is under obligation to T. J. Critten, of Council Grove, for a number of cattle sent here for use by the class in stock judging.

The preparatory class party on Monday evening, in the Womens' Gymnasium, was a great success. Preparatory class parties always are.

Professor Walters is the happy recipient of a rather peculiar valentine—a very handsome alarm-clock sent by an unknown party in west Kansas.

Henry M. Thomas, '98, of Wichita, Kan., collector for the J. I. Case Threshing Machine Company, made a hurried visit to the College last Wednesday.

A few days ago Foreman William Baxter, of the College greenhouse, celebrated his twentieth anniversary as a College employé. The INDUSTRIALIST congratulates.

The *Kansas Educator*, published at Hutchinson, contains a short write-up of the Agricultural College and half-tone engravings of Anderson Hall and President Nichols.

F. M. Gifford, of Milford, will hold an annual cattle sale of nineteen pure-bred cows and fourteen bulls from their famous Elmwood herd, at the sales arena in Manhattan, March 8, 1904.

Captain Alberti, a Russian exile, will give a lecture at the Manhattan opera-house next Tuesday evening, March 1, entitled "A Trip Through Siberia," under the auspicies of the Masonic lodge.

The Board committee appointed at the last Board meeting for the purpose of examining the claims of the Faculty for a revision of the courses of study met to-day and consulted the heads of the different departments.

Lieut. Ned M. Green, '97, of the Twenty-fifth United States Infantry, stationed at Fort Niobrara, Neb., visited College last Thursday. He was on his way to Washington, expecting to be transferred to the new scenes of hostilities across the Pacific.

Miss L. Maud Zimmerman, '02, writes to Professor Walters, from 1007 Commercial street, Emporia, Kan., that she and Miss Esther Hanson, '03, are pursuing the professional branches at the State Normal in order to take the State teachers' examination.

Mrs. Nichols and Mrs. Mayo entertained the younger members of the Board of Instruction at an evening party last Saturday at the residence of the former, Juliette and Poyntz Avenues. Games, social chat and light refreshments formed the program, and all report a good time.

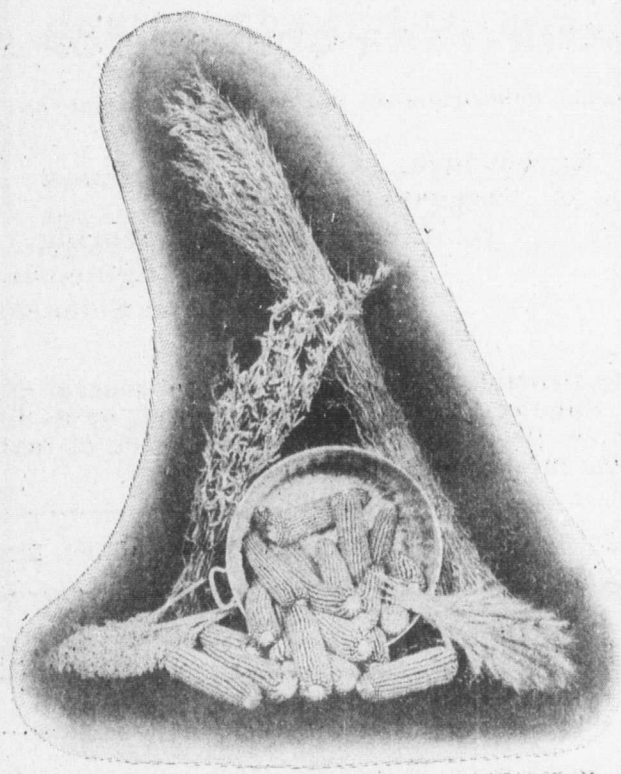
The carpenter-shop is building a picture cabinet to exhibit photographic views of the College, at the St. Louis Exposition. The cabinet will hold 152 photographs, nine by eleven inches, fastened to a revoling cylinder. An electric motor of one-quarter horse-power will rotate the cylinder in such a way that the pictures will be exhibited four at a time. It was designed by President Nichols. It will be a handsome and interesting piece of furniture.

REDUCED RATES TO CALIFORNIA, MARCH 1 TO APRIL 30.—That long-looked for California opportunity is here at last. March 1 to April 30, the Rock Island System will sell "tourist" tickets to principal points in California at these low rates: $25 from Missouri River Points; $25 from Manhattan, Kan. Tickets are good in tourists sleepers, which the Rock Island runs daily, Chicago and Kansas City to Los Angeles and San Francisco by way of El Paso; three times a week via Colorado Springs and Salt Lake City. March and April are the pleasantest months of the California year—doubly so because, at home, they are usually the very opposite. Tickets and births at all Rock Island ticket offices, or by addressing A. E. Cooper, D. P. A., Topeka, or J. A. Stewart, G. A. P. D., Kansas City. 17-27.

The Experiment Station is sending out Bulletin No. 121, containing a discussion of the "Treatment and Utilization of Flood-Damaged Lands," by Professors Ten Eyck, Roberts, and Dickens. The pamphlet is illustrated by sixteen half-tones made of the flooded districts near Manhattan last May and June. It will prove valuable reading to the farmers along the Kansas and its tributaries and an interesting record of the dark days of last spring.

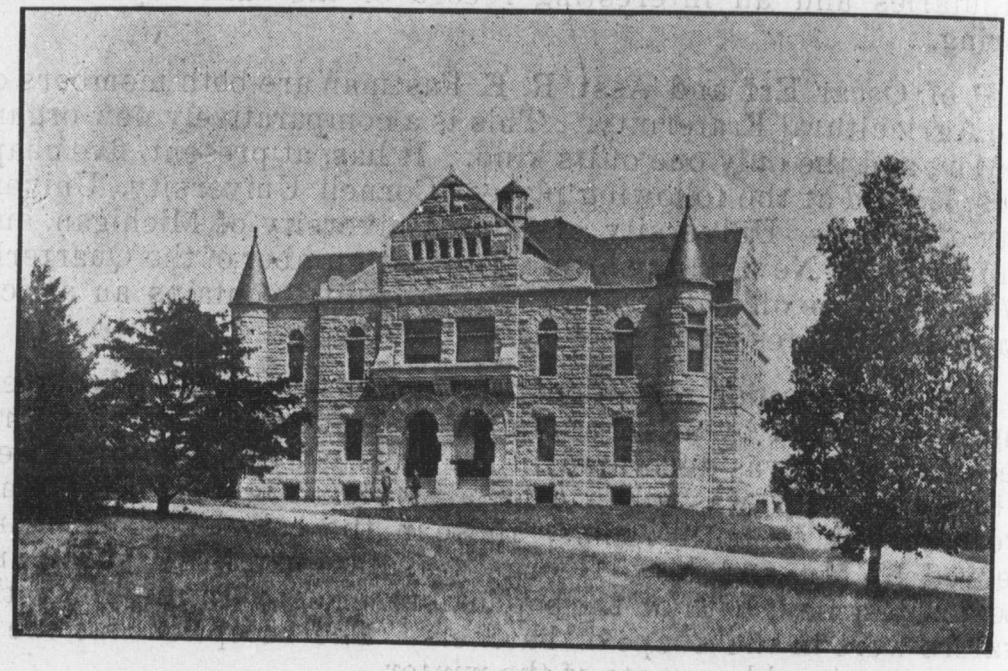
Prof. Oscar Erf and Asst. R. E. Eastman are both members of the Agricultural Fraternity. This is a comparatively new organization, and the only one of its kind. It has, at present, five chapters, located at the following places: Cornell University, University of Illinois, University of Ohio, University of Michigan, and University of New Hampshire. The last number of the Quarterly *Alpha Zeta*, the official organ of the fraternity, contains an article written by Professor Erf.—*Students' Herald.*

The senior-junior reception held in Kedzie Hall Monday evening was enjoyed by a large number of students. One of the reception rooms was decorated in the class colors of both classes, while the other was all in colonial style. Light refreshments were served in both rooms, those in the colonial room being served by Mr. and Mrs. George Washington (Miss Neiman and Lester Ramsey, both of the sophomore class). In this room the wafers were in the shape of hatchets. The reception was one of the most enjoyable events of the winter.



Crop Samples—Farm Department.

KANSAS STATE AGRICULTURAL COLLEGE



Agricultural Hall.

FIVE FOUR-YEAR COURSES OF STUDY

Each leading to the degree of Bachelor of Science, are as follows:

1. **Agriculture.**
2. **Domestic Science.**
3. **Mechanical Engineering.**
4. **Electrical Engineering.**
5. **General Science.**

This Institution is supported by the general government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.

SPRING TERM BEGINS MARCH 29, 1904

For catalogue or other information, address

Pres. E. R. Nichols, - - Manhattan, Kan.